

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: )  
Richard William Falla LE PAGE et al. ) Group Art Unit: To Be Assigned  
Application Number: To Be Assigned ) Examiner: To Be Assigned  
Filed: January 26, 2001 )  
For: NUCLEIC ACIDS AND PROTEINS FROM STREPTOCOCCUS PNEUMONIAE )

## **SUBMISSION OF SEQUENCE LISTING**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Applicants submit herewith a paper copy of the Sequence Listing as filed in parent application number PCT/GB99/02452 filed July 27, 1999. The Sequence Listing in this application is identical to the Sequence Listing submitted in the parent application.

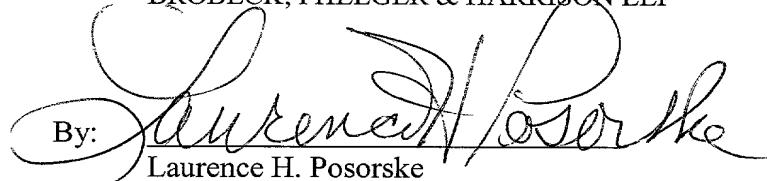
Applicants respectfully submit that it is unnecessary to file a computer readable form of the Sequence Listing, since it would be a duplicate of the computer readable form submitted in parent application number PCT/GB99/02452. Therefore, in accordance with 37 C.F.R. §1.821(e), no computer readable form is enclosed.

Applicants herewith request that the computer readable form submitted in parent application number PCT/GB99/02452 be used in this application. The undersigned certifies his belief that the computer readable form submitted in the parent application is identical in content to the paper copy of the Sequence Listing enclosed herewith.

It is believed that no fees are required for this submission; however, the Commissioner is authorized to charge any fee necessary for entry of this paper to Deposit Account 50-1640.

Respectfully submitted,

BROBECK, PHLEGER & HARRISON LLP

  
By: *Laurence H. Posorske*  
Laurence H. Posorske  
Registration No. 34,698

January 26, 2001

Brobeck, Phleger & Harrison LLP  
Intellectual Property Department  
1333 H Street, N.W., Suite 800  
Washington, D.C. 20005  
Tel: (202) 220-6000  
Fax: (202) 220-5200  
LHP:nej

## SEQUENCE LISTING

<110> Microbial Technics Limited  
Le Page, Richard WF  
Wells, Jeremy M  
Hanniffy, Sean B

<120> Proteins

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<141> 1999-07-27

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<151> 1999-03-19

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<213> *Streptococcus agalactiae*

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Lys Ala Ser Tyr Lys Ala Ile Val Lys Lys Phe Glu Lys Glu Asn Lys  
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Asn Val Lys Lys Asp Pro Ser Lys Ala Ala Asp Val Phe Ser Leu Pro  
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Pro Glu Gln Tyr Ser Lys Glu Ile Ala Lys Asn Asp Thr Lys Gln Ser  
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195 200 205

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Gln Lys Lys Asn Asp Gly Phe Val Asn Leu Thr Ala Glu Asn Thr Met  
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<213> Streptococcus agalactiae

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<213> *Streptococcus agalactiae*

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30

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100 105 110

Ser Thr Pro Ser Thr Asn Thr Thr Asn Ser Ser Gln Ala Asp Ser Lys  
115 120 125

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130 135 140

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Gln Thr Asn Gln Asn Ala Ser Val Pro Ala Leu Ser Phe Asp Asp Asn  
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370 375 380

Ser Gly Phe Ser Leu Ser Thr Ala Val Asn Thr Ala Ser Tyr Ile Ala  
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405 410 415

Lys Glu Leu Gly Tyr Thr Phe Asp Pro Phe Met Gly Asn Gly Gly Asp  
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Trp Gln His Lys Ala Gly Phe Glu Thr Thr His Ser Pro Lys Val Gly  
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195 200 205

Lys Gly Gln Thr Leu Gly Leu Val Gly Gln Thr Gly Ser Gly Lys Thr  
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Gln Met Pro Ala Gly Phe Glu Thr Leu Ile Gly Glu Lys Gly Val Ser  
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Gly Lys Ser Thr Ile Ile Ser Ala His Arg Leu Ser Ala Val Val His  
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85 90 95

Arg Asp Ala Phe Ala Asn Met Glu Arg Leu Gly Met Ser Tyr Phe Asp  
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Arg Thr Pro Ala Gly Ser Ile Val Ser Arg Ile Thr Asn Asp Thr Glu  
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Ala Ile Ser Asp Met Phe Ser Gly Ile Leu Ser Ser Phe Ile Ser Ala  
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Lys Leu Thr Gly Leu Val Ala Leu Leu Leu Pro Val Ile Phe Ile Leu  
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Val Asn Val Tyr Arg Lys Lys Ser Val Thr Val Ile Ala Lys Thr Arg  
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Ser Leu Leu Ser Asp Ile Asn Ser Lys Leu Ser Gly Ser Ile Glu Gly  
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Ile Arg Ile Val Gln Ala Phe Gly Gln Glu Glu Arg Leu Lys Thr Glu  
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Gly Gly Leu Thr Ala Gly Leu Met Tyr Ala Phe Ile Gln Tyr Val Asn  
275 280 285

Arg Leu Phe Asp Pro Leu Ile Glu Val Thr Gln Asn Phe Ser Thr Leu  
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<213> Streptococcus agalactiae

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tttgctaaaa ttgcttaattt taaaggaaaa caagatgctg ttatatacga agcacatgta 1860  
agagacttca cttctgatca atcttggac ggaaaattaa aaaatcaact tggtacctt 1920

gcagccttt cagagaaaact agattattta cagaaattag gagttacaca cattoagctt 1980  
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gcaaaaactt atctcttga ggatatagaa cctaattatt atcactttat gaatgaagat 2280  
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<210> 10

<211> 1250

<212> PRT

<213> Streptococcus agalactiae

<400> 10

Met Lys Arg Lys Asp Leu Phe Gly Asp Lys Gln Thr Gln Tyr Thr Ile  
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Arg Lys Leu Ser Val Gly Val Ala Ser Val Ala Thr Gly Val Cys Ile  
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Phe Leu His Ser Pro Gln Val Phe Ala Glu Glu Val Ser Val Ser Pro  
35 40 45

Ala Thr Thr Ala Ile Ala Lys Ser Asn Ile Asn Gln Val Asp Asn Arg  
50 55 60

Gln Ser Thr Asn Leu Lys Asp Asp Ile Asn Ser Asn Ser Glu Thr Val  
65 70 75 80

Val Thr Pro Ser Asp Met Pro Asp Thr Lys Gln Leu Val Ser Asp Glu  
85 90 95

Thr Asp Thr Gln Lys Gly Val Thr Glu Pro Asp Lys Ala Thr Ser Leu  
100 105 110

Leu Glu Glu Asn Lys Gly Pro Val Ser Asp Lys Asn Thr Leu Asp Leu  
115 120 125

Lys Val Ala Pro Ser Thr Leu Gln Asn Thr Pro Asp Lys Thr Ser Gln  
130 135 140

Ala Ile Gly Ala Pro Ser Pro Thr Leu Lys Val Ala Asn Gln Ala Pro  
145 150 155 160

Gln Ile Glu Asn Gly Tyr Phe Arg Leu His Leu Lys Glu Leu Pro Gln  
165 170 175

Gly His Pro Val Glu Ser Thr Gly Leu Trp Ile Trp Gly Asp Val Asp  
180 185 190

Gln Pro Ser Ser Asn Trp Pro Asn Gly Ala Ile Pro Met Thr Asn Ala  
195 200 205

Lys Lys Asp Asp Tyr Gly Tyr Val Asp Phe Lys Leu Ser Glu Lys  
210 215 220

Gln Arg Lys Gln Ile Ser Phe Leu Ile Asn Asn Lys Ala Gly Thr Asn  
225 230 235 240

Leu Ser Gly Asp His His Ile Pro Leu Leu Arg Pro Glu Met Asn Gln  
245 250 255

Val Trp Ile Asp Glu Lys Tyr Gly Ile His Thr Tyr Gln Pro Leu Lys  
260 265 270

Glu Gly Tyr Val Arg Ile Asn Tyr Leu Ser Ser Ser Gly Asn Tyr Asp  
275 280 285

His Leu Ser Ala Trp Leu Phe Lys Asp Val Ala Thr Pro Ser Thr Thr  
290 295 300

Trp Pro Asp Gly Ser Asn Phe Val Asn Gln Gly Leu Tyr Gly Arg Tyr  
305 310 315 320

Ile Asp Val Pro Leu Lys Thr Asn Ala Lys Glu Ile Gly Phe Leu Ile  
325 330 335

Leu Asp Glu Ser Lys Thr Gly Asp Ala Val Lys Val Gln Pro Asn Asp  
340 345 350

Tyr Val Phe Arg Asp Leu Ala Asn His Asn Gln Ile Phe Val Lys Asp  
355 360 365

Lys Asp Pro Lys Val Tyr Asn Asn Pro Tyr Tyr Ile Asp Gln Val Gln  
370 375 380

Leu Lys Asp Ala Gln Gln Thr Asp Leu Thr Ser Ile Gln Ala Ser Phe  
385 390 395 400

Thr Thr Leu Asp Gly Val Asp Lys Thr Glu Ile Leu Lys Glu Leu Lys  
405 410 415

Val Thr Asp Lys Asn Gln Asn Ala Ile Gln Ile Ser Asp Ile Thr Leu  
420 425 430

Asp Thr Ser Lys Ser Leu Leu Ile Ile Lys Gly Asp Phe Asn Pro Lys  
435 440 445

Gln Gly His Phe Asn Ile Ser Tyr Asn Gly Asn Asn Val Thr Thr Arg  
450 455 460

Gln Ser Trp Glu Phe Lys Asp Gln Leu Tyr Ala Tyr Ser Gly Asn Leu  
465 470 475 480

Gly Ala Val Leu Asn Gln Asp Gly Ser Lys Val Glu Ala Ser Leu Trp  
485 490 495

Ser Pro Ser Ala Asp Ser Val Thr Met Ile Ile Tyr Asp Lys Asp Asn  
500 505 510

Gln Asn Arg Val Val Ala Thr Thr Pro Leu Val Lys Asn Asn Lys Gly  
515 520 525

Val Trp Gln Thr Ile Leu Asp Thr Lys Leu Gly Ile Lys Asn Tyr Thr  
530 535 540

Gly Tyr Tyr Tyr Leu Tyr Glu Ile Lys Arg Gly Lys Asp Lys Val Lys  
545 550 555 560

Ile Leu Asp Pro Tyr Ala Lys Ser Leu Ala Glu Trp Asp Ser Asn Thr  
565 570 575

Val Asn Asp Asp Ile Lys Thr Ala Lys Ala Ala Phe Val Asn Pro Ser  
580 585 590

Gln Leu Gly Pro Lys Asn Leu Ser Phe Ala Lys Ile Ala Asn Phe Lys  
595 600 605

Gly Lys Gln Asp Ala Val Ile Tyr Glu Ala His Val Arg Asp Phe Thr  
610 615 620

Ser Asp Gln Ser Leu Asp Gly Lys Leu Lys Asn Gln Leu Gly Thr Phe  
625 630 635 640

Ala Ala Phe Ser Glu Lys Leu Asp Tyr Leu Gln Lys Leu Gly Val Thr  
645 650 655

His Ile Gln Leu Leu Pro Val Leu Ser Tyr Phe Tyr Val Asn Glu Met  
660 665 670

Asp Lys Ser Arg Ser Thr Ala Tyr Thr Ser Ser Asp Asn Asn Tyr Asn  
675 680 685

Trp Gly Tyr Asp Pro Gln Ser Tyr Phe Ala Leu Ser Gly Met Tyr Ser  
690 695 700

Glu Lys Pro Lys Asp Pro Ser Ala Arg Ile Ala Glu Leu Lys Gln Leu  
705 710 715 720

Ile His Asp Ile His Lys Arg Gly Met Gly Val Ile Leu Asp Val Val  
725 730 735

Tyr Asn His Thr Ala Lys Thr Tyr Leu Phe Glu Asp Ile Glu Pro Asn  
740 745 750

Tyr Tyr His Phe Met Asn Glu Asp Gly Ser Pro Arg Glu Ser Phe Gly  
755 760 765

Gly Gly Arg Leu Gly Thr Thr His Ala Met Ser Arg Arg Val Leu Val  
770 775 780

Asp Ser Ile Lys Tyr Leu Thr Ser Glu Phe Lys Val Asp Gly Phe Arg  
785 790 795 800

Phe Asp Met Met Gly Asp His Asp Ala Ala Ala Ile Glu Leu Ala Tyr  
805 810 815

Lys Glu Ala Lys Ala Ile Asn Pro Asn Met Ile Met Ile Gly Glu Gly  
820 825 830

Trp Arg Thr Phe Gln Gly Asp Gln Gly Lys Pro Val Lys Pro Ala Asp  
835 840 845

Gln Asp Trp Met Lys Ser Thr Asp Thr Val Gly Val Phe Ser Asp Asp  
850 855 860

Ile Arg Asn Ser Leu Lys Ser Gly Phe Pro Asn Glu Gly Thr Pro Ala  
865 870 875 880

Phe Ile Thr Gly Gly Pro Gln Ser Leu Gln Gly Ile Phe Lys Asn Ile  
885 890 895

Lys Ala Gln Pro Gly Asn Phe Glu Ala Asp Ser Pro Gly Asp Val Val  
900 905 910

Gln Tyr Ile Ala Ala His Asp Asn Leu Thr Leu His Asp Val Ile Ala  
915 920 925

Lys Ser Ile Asn Lys Asp Pro Lys Val Ala Glu Glu Asp Ile His Arg  
930 935 940

Arg Leu Arg Leu Gly Asn Val Met Ile Leu Thr Ser Gln Gly Thr Ala  
945 950 955 960

Phe Ile His Ser Gly Gln Glu Tyr Gly Arg Thr Lys Arg Leu Leu Asn  
965 970 975

Pro Asp Tyr Met Thr Lys Val Ser Asp Asp Lys Leu Pro Asn Lys Ala  
980 985 990

Thr Leu Ile Glu Ala Val Lys Glu Tyr Pro Tyr Phe Ile His Asp Ser  
995 1000 1005

Tyr Asp Ser Ser Asp Ala Ile Asn His Phe Asp Trp Ala Ala Ala Thr  
1010 1015 1020

Asp Asn Asn Lys His Pro Ile Ser Thr Lys Thr Gln Ala Tyr Thr Ala  
1025 1030 1035 1040

Gly Leu Ile Thr Leu Arg Arg Ser Thr Asp Ala Phe Arg Lys Leu Ser  
1045 1050 1055

Lys Ala Glu Ile Asp Arg Glu Val Ser Leu Ile Thr Glu Val Gly Gln  
1060 1065 1070

Gly Asp Ile Lys Glu Lys Asp Leu Val Ile Ala Tyr Gln Thr Ile Asp  
1075 1080 1085

Ser Lys Gly Asp Ile Tyr Ala Val Phe Val Asn Ala Asp Ser Lys Ala  
1090 1095 1100

Arg Asn Val Leu Leu Gly Glu Lys Tyr Lys His Leu Leu Lys Gly Gln  
1105 1110 1115 1120

Val Ile Val Asp Ala Asp Gln Ala Gly Ile Lys Pro Ile Ser Thr Pro  
1125 1130 1135

Arg Gly Val His Phe Glu Lys Asp Ser Leu Leu Ile Asp Pro Leu Thr  
1140 1145 1150

Ala Ile Val Ile Lys Val Gly Lys Val Ala Pro Ser Pro Lys Glu Glu  
1155 1160 1165

Leu Gln Ala Asp Tyr Pro Lys Thr Gln Ser Phe Lys Gly Ser Lys Thr  
1170 1175 1180

Val Glu Lys Val Asn Arg Ile Ala Asn Lys Thr Ser Ile Thr Pro Val  
1185 1190 1195 1200

Val Ser Asn Lys Thr Asp Ser Tyr Leu Thr Asn Glu Ala Asn Leu Pro  
1205 1210 1215

Lys Thr Gly Asp Lys Ser Ser Lys Ile Leu Ser Val Val Gly Ile Ser  
 1220 1225 1230

Ile Leu Ala Ser Leu Leu Ala Leu Leu Gly Leu Ser Leu Lys Arg Asn  
 1235 1240 1245

Arg Thr  
 1250

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 <211> 921  
 <212> DNA  
 <213> Streptococcus agalactiae

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 ccaatgtatg ccatgacaaa agaagtatct ggagacctaa atgatgtgag gatgatccaa 180  
 tcagggtcag gcattcattc ctttgaaccg tctgtaaatg atgtggcagc tatttatgac 240  
 gcggattttgt ttgtttacca atcacatacc tttagaagctt gggcaaggga tctagaccct 300  
 aatttaaaaa aatcaaaggta taatgtgtt gaagcgtcaa aacctctgac actagataga 360  
 gtcaaaagggc tagaagatata ggaagtcaca caaggcattt accctgcgac actttatgac 420  
 ccacataacct ggacggatcc cgtttttagct ggtgaggaag ctgttaatata cgctaaagag 480  
 ctaggacatt tggatcctaa acacaaagac agttacacta aaaaggctaa ggcttcaaaa 540  
 aaagaagcag agcaactaac tgaagaatac actcaaaaat taaaaaggta gcgctcaaaa 600  
 acatttgtga cgcaacacac ggcattttct tatctggcta aacgattcgg cttgaaacaa 660  
 cttggtatct cgggtatccc tccagagcaa gagccctctc ctcgccaatt gaaagaaaatt 720  
 caagactttg ttaaaagaata caacgtcaag actattttg cagaagacaa cgtcaaccc 780  
 aaaattgctc atgttattgc gaaatcaaca ggagctaaag taaagacatt aagtccactt 840  
 gaagctgctc caagcggaaa caagacatat ctagaaaatc ttagagcaaa tttggaaagtg 900  
 ctctatcaac agttgaagta a 921

&lt;210&gt; 12

&lt;211&gt; 306

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 12

Met Lys Lys Val Phe Phe Leu Met Ala Met Val Val Ser Leu Val Met  
1 5 10 15

Ile Ala Gly Cys Asp Lys Ser Ala Asn Pro Lys Gln Pro Thr Gln Gly  
20 25 30

Met Ser Val Val Thr Ser Phe Tyr Pro Met Tyr Ala Met Thr Lys Glu  
35 40 45

Val Ser Gly Asp Leu Asn Asp Val Arg Met Ile Gln Ser Gly Ala Gly  
50 55 60

Ile His Ser Phe Glu Pro Ser Val Asn Asp Val Ala Ala Ile Tyr Asp  
65 70 75 80

Ala Asp Leu Phe Val Tyr Gln Ser His Thr Leu Glu Ala Trp Ala Arg  
85 90 95

Asp Leu Asp Pro Asn Leu Lys Lys Ser Lys Val Asn Val Phe Glu Ala  
100 105 110

Ser Lys Pro Leu Thr Leu Asp Arg Val Lys Gly Leu Glu Asp Met Glu  
115 120 125

Val Thr Gln Gly Ile Asp Pro Ala Thr Leu Tyr Asp Pro His Thr Trp  
130 135 140

Thr Asp Pro Val Leu Ala Gly Glu Ala Val Asn Ile Ala Lys Glu  
145 150 155 160

Leu Gly His Leu Asp Pro Lys His Lys Asp Ser Tyr Thr Lys Lys Ala  
165 170 175

Lys Ala Phe Lys Lys Glu Ala Glu Gln Leu Thr Glu Glu Tyr Thr Gln  
 180 185 190

Lys Phe Lys Lys Val Arg Ser Lys Thr Phe Val Thr Gln His Thr Ala  
 195 200 205

Phe Ser Tyr Leu Ala Lys Arg Phe Gly Leu Lys Gln Leu Gly Ile Ser  
 210 215 220

Gly Ile Ser Pro Glu Gln Glu Pro Ser Pro Arg Gln Leu Lys Glu Ile  
 225 230 235 240

Gln Asp Phe Val Lys Glu Tyr Asn Val Lys Thr Ile Phe Ala Glu Asp  
 245 250 255

Asn Val Asn Pro Lys Ile Ala His Ala Ile Ala Lys Ser Thr Gly Ala  
 260 265 270

Lys Val Lys Thr Leu Ser Pro Leu Glu Ala Ala Pro Ser Gly Asn Lys  
 275 280 285

Thr Tyr Leu Glu Asn Leu Arg Ala Asn Leu Glu Val Leu Tyr Gln Gln  
 290 295 300

Leu Lys  
 305

<210> 13

<211> 657

<212> DNA

<213> *Streptococcus agalactiae*

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 gagcgtcgac aacgcgtatgt tgagaataag agccaaggca atgttttaga gcgtcgtcaa 300  
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 tcagtgataa ataaattacc taaaacaggt ggtgatcaaa atgtcatttt taaacttgta 600  
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<210> 14

<211> 218

<212> PRT

<213> Streptococcus agalactiae

<400> 14

Met Phe Asn Lys Ile Gly Phe Arg Thr Trp Lys Ser Gly Lys Leu Trp

1	5	10	15
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Leu Tyr Met Gly Val Leu Gly Ser Thr Ile Ile Leu Gly Ser Ser Pro

20	25	30
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Val Ser Ala Met Asp Ser Val Gly Asn Gln Ser Gln Gly Asn Val Leu

35	40	45
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Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu

50	55	60
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Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu

65	70	75	80
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Glu Arg Arg Gln Arg Asp Val Glu Asn Lys Ser Gln Gly Asn Val Leu

85	90	95
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Glu Arg Arg Gln Arg Asp Ala Glu Asn Lys Ser Gln Gly Asn Val Leu

100	105	110
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Glu Arg Arg Gln Arg Asp Ala Asp Asn Lys Ser Gln Val Gly Gln Leu  
 115 120 125

Ile Gly Lys Asn Pro Leu Phe Ser Lys Pro Thr Val Ser Arg Glu Asn  
 130 135 140

Asn His Ser Ser Gln Gly Asp Ser Asn Lys Gln Ser Phe Ser Lys Lys  
 145 150 155 160

Val Ser Gln Val Thr Asn Val Ala Asn Arg Pro Met Leu Thr Asn Asn  
 165 170 175

Ser Arg Thr Ile Ser Val Ile Asn Lys Leu Pro Lys Thr Gly Gly Asp  
 180 185 190

Gln Asn Val Ile Phe Lys Leu Val Gly Phe Gly Leu Ile Leu Leu Thr  
 195 200 205

Ser Arg Cys Gly Leu Arg Arg Asn Glu Asn  
 210 215

<210> 15

<211> 1029

<212> DNA

<213> Streptococcus agalactiae

<400> 15

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 attaaaaaaag aaaaaagaga caagccggat aataaaaagc aaatcagcga gacacttaaa 180  
 gttcctttaa aacccaaaaa agtagttgtt tttgatatgg gagctttgga tactatcaca 240  
 gctttaggag ctgaaaaatc tgttattggat atcccgaaagg ctaaaaatgc tctaagttta 300  
 ttgcccaata acgtcaaatac tgttataaa gctaagagat accaagacgt aggaagtctc 360  
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 cgtatggctt ctgttgataa tattgaaaaa tttaaggagg ctgcacctaa agcagcatta 480  
 gtatatgctg gagtcgactc aaaaaaaagta tttgacaaag gagttgctga gcgtgtcaca 540

atgttaggga aaatcttcga ccaaaataaa aaggcaaaaa cctttaataa agatatcgca 600  
 caagctgttc ttaaaattgca gaaaactatt gagaaaaaaag gtaaacctac agctctattt 660  
 gtaatggcaa acagcggtga acttttaact caatcacctt ctggtcgtt tgggtggatt 720  
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 cccgtatctt atgaatacat cgctgaaaaa aatcctaact atctcttgc tttagatcgt 840  
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 gcaactgatg ctgtcaaaaa caaacgtgtt catgaggtag atggaaaaga ttggtatatc 960  
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<210> 16

<211> 342

<212> PRT

<213> *Streptococcus agalactiae*

<400> 16

Met Thr Lys Lys Leu Ile Ile Ala Ile Leu Ala Leu Cys Thr Ile Leu

1	5	10	15
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Thr Thr Ser Gln Ala Val Leu Ala Lys Glu Lys Ser Gln Thr Val Thr

20	25	30
----	----	----

Ile Lys Asn Asn Tyr Ser Val Tyr Ile Lys Lys Glu Lys Arg Asp Lys

35	40	45
----	----	----

Pro Asp Asn Lys Lys Gln Ile Ser Glu Thr Leu Lys Val Pro Leu Lys

50	55	60
----	----	----

Pro Lys Lys Val Val Phe Asp Met Gly Ala Leu Asp Thr Ile Thr

65	70	75	80
----	----	----	----

Ala Leu Gly Ala Glu Lys Ser Val Ile Gly Ile Pro Lys Ala Lys Asn

85	90	95
----	----	----

Ala Leu Ser Leu Leu Pro Asn Asn Val Lys Ser Val Tyr Lys Ala Lys

100	105	110
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Arg Tyr Gln Asp Val Gly Ser Leu Phe Glu Pro Asn Phe Glu Ala Ile  
115 120 125

Ala Arg Met Gln Pro Asp Val Val Phe Leu Gly Ala Arg Met Ala Ser  
130 135 140

Val Asp Asn Ile Glu Lys Leu Lys Glu Ala Ala Pro Lys Ala Ala Leu  
145 150 155 160

Val Tyr Ala Gly Val Asp Ser Lys Lys Val Phe Asp Lys Gly Val Ala  
165 170 175

Glu Arg Val Thr Met Leu Gly Lys Ile Phe Asp Gln Asn Lys Lys Ala  
180 185 190

Lys Thr Phe Asn Lys Asp Ile Ala Gln Ala Val Leu Lys Leu Gln Lys  
195 200 205

Thr Ile Glu Lys Lys Gly Lys Pro Thr Ala Leu Phe Val Met Ala Asn  
210 215 220

Ser Gly Glu Leu Leu Thr Gln Ser Pro Ser Gly Arg Phe Gly Trp Ile  
225 230 235 240

Phe Ser Val Gly Gly Phe Lys Ala Val Asn Glu Asn Glu Lys Leu Ser  
245 250 255

Ser His Gly Thr Pro Val Ser Tyr Glu Tyr Ile Ala Glu Lys Asn Pro  
260 265 270

Asn Tyr Leu Phe Val Leu Asp Arg Gly Ala Thr Ile Gly Gln Gly Ala  
275 280 285

Ser Ser Lys Glu Leu Phe Asn Asn Asp Val Ile Lys Ala Thr Asp Ala  
290 295 300

Val Lys Asn Lys Arg Val His Glu Val Asp Gly Lys Asp Trp Tyr Ile  
305 310 315 320

Asn Ser Gly Gly Ser Arg Val Thr Leu Arg Met Ile Lys Asp Val Gln  
325 330 335

Asn Phe Val Asp Asn Arg  
340

<210> 17  
<211> 2469  
<212> DNA  
<213> *Streptococcus agalactiae*

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aaaggaacta aagaagctaa agaaaaaggt tttagtcaag tggccatct cagtaagaa 540  
gaagttgcgg cagtcaatga agcaaaaaga caaggacgct atactacaga cgatggctat 600  
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 gtaacaaaag atggtaaagt gggctatatt atgccaaaag atggcaagga ctatttctat 1560  
 gctcgttatc aacttgattt gactcagatt gccttgccg aacaagaact aatgcttaaa 1620  
 gataagaagc attaccgtta tgacattgtt gatacaggca ttgagccacg acttgctgta 1680  
 gatgtgtcaa gtctgccat gcatgctggt aatgctactt acgataactgg aagttcggtt 1740  
 gttatcccac atattgatca tatccatgtc gttccgtatt catggttgac gcgcaatcag 1800  
 attgcaacaa tcaagtatgt gatgcaacac cccgaagttc gtccggatgt atggtctaag 1860  
 ccagggcatg aagagtcagg ttcggtcatt ccaaatgtta cgcctttaa taaacgtgct 1920  
 ggtatgccaa actggcaa at tatccattct gctgaagaag ttcaaaaagc cctagcagaa 1980  
 ggtcgaaaa cagcaccaga cggctatatt ttcgatccac gagatgttt ggcaaaagaa 2040  
 actttgtat ggaaagatgg ctccatttgc atcccaagag cagatggcag ttcattgaga 2100  
 accattaata aatccgatct atcccaagct gagtggcaac aagctcaaga gttattggca 2160  
 aagaaaaatg ctggtgatgc tactgatacg gataaacctg aagaaaaagca acaggcagat 2220  
 aagagcaatg aaaaccaaca gccaagtgaa gccagtaaaag aagaaaaaga atcagatgac 2280  
 tttatagaca gtttaccaga ctatggtcta gatagagcaa ccctagaaga tcatatcaat 2340  
 caattagcac aaaaagctaa tatcgatcct aagtatctca ttttccaacc agaagggtgac 2400  
 caattttata ataaaaatgg tgaattggta acttatgata tcaagacact tcaacaaata 2460  
 aacccttaa 2469

<210> 18

<211> 822

<212> PRT

<213> Streptococcus agalactiae

<400> 18

Met Lys Lys Thr Tyr Gly Tyr Ile Gly Ser Val Ala Ala Ile Leu Leu

1	5	10	15
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Ala Thr His Ile Gly Ser Tyr Gln Leu Gly Lys His His Met Gly Leu

20	25	30
----	----	----

Ala Thr Lys Asp Asn Gln Ile Ala Tyr Ile Asp Asp Ser Lys Gly Lys

35	40	45
----	----	----

Val Lys Ala Pro Lys Thr Asn Lys Thr Met Asp Gln Ile Ser Ala Glu

50	55	60
----	----	----

Glu Gly Ile Ser Ala Glu Gln Ile Val Val Lys Ile Thr Asp Gln Gly  
65 70 75 80

Tyr Val Thr Ser His Gly Asp His Tyr His Phe Tyr Asn Gly Lys Val  
85 90 95

Pro Tyr Asp Ala Ile Ile Ser Glu Glu Leu Leu Met Thr Asp Pro Asn  
100 105 110

Tyr His Phe Lys Gln Ser Asp Val Ile Asn Glu Ile Leu Asp Gly Tyr  
115 120 125

Val Ile Lys Val Asn Gly Asn Tyr Tyr Val Tyr Leu Lys Pro Gly Ser  
130 135 140

Lys Arg Lys Asn Ile Arg Thr Lys Gln Gln Ile Ala Glu Gln Val Ala  
145 150 155 160

Lys Gly Thr Lys Glu Ala Lys Glu Lys Gly Leu Ala Gln Val Ala His  
165 170 175

Leu Ser Lys Glu Glu Val Ala Ala Val Asn Glu Ala Lys Arg Gln Gly  
180 185 190

Arg Tyr Thr Thr Asp Asp Gly Tyr Ile Phe Ser Pro Thr Asp Ile Ile  
195 200 205

Asp Asp Leu Gly Asp Ala Tyr Leu Val Pro His Gly Asn His Tyr His  
210 215 220

Tyr Ile Pro Lys Lys Asp Leu Ser Pro Ser Glu Leu Ala Ala Ala Gln  
225 230 235 240

Ala Tyr Trp Ser Gln Lys Gln Gly Arg Gly Ala Arg Pro Ser Asp Tyr  
245 250 255

Arg Pro Thr Pro Ala Pro Gly Arg Arg Lys Ala Pro Ile Pro Asp Val  
260 265 270

Thr Pro Asn Pro Gly Gln Gly His Gln Pro Asp Asn Gly Gly Tyr His  
275 280 285

Pro Ala Pro Pro Arg Pro Asn Asp Ala Ser Gln Asn Lys His Gln Arg  
290 295 300

Asp Glu Phe Lys Gly Lys Thr Phe Lys Glu Leu Leu Asp His Leu His  
305 310 315 320

Arg Leu Asp Leu Lys Tyr Arg His Val Glu Glu Asp Gly Leu Ile Phe  
325 330 335

Glu Pro Thr Gln Val Ile Lys Ser Asn Ala Phe Gly Tyr Val Val Pro  
340 345 350

His Gly Asp His Tyr His Ile Ile Pro Arg Ser Gln Leu Ser Pro Leu  
355 360 365

Glu Met Glu Leu Ala Asp Arg Tyr Leu Ala Gly Gln Thr Asp Asp Asn  
370 375 380

Asp Ser Gly Ser Asp His Ser Lys Pro Ser Asp Lys Glu Val Thr His  
385 390 395 400

Thr Phe Leu Gly His Arg Ile Lys Ala Tyr Gly Lys Gly Leu Asp Gly  
405 410 415

Lys Pro Tyr Asp Thr Ser Asp Ala Tyr Val Phe Ser Lys Glu Ser Ile  
420 425 430

His Ser Val Asp Lys Ser Gly Val Thr Ala Lys His Gly Asp His Phe  
435 440 445

His Tyr Ile Gly Phe Gly Glu Leu Glu Gln Tyr Glu Leu Asp Glu Val  
450 455 460

Ala Asn Trp Val Lys Ala Lys Gly Gln Ala Asp Glu Leu Val Ala Ala  
465 470 475 480

Leu Asp Gln Glu Gln Gly Lys Glu Lys Pro Leu Phe Asp Thr Lys Lys  
485 490 495

Val Ser Arg Lys Val Thr Lys Asp Gly Lys Val Gly Tyr Ile Met Pro  
500 505 510

Lys Asp Gly Lys Asp Tyr Phe Tyr Ala Arg Tyr Gln Leu Asp Leu Thr  
515 520 525

Gln Ile Ala Phe Ala Glu Gln Glu Leu Met Leu Lys Asp Lys Lys His  
530 535 540

Tyr Arg Tyr Asp Ile Val Asp Thr Gly Ile Glu Pro Arg Leu Ala Val  
545 550 555 560

Asp Val Ser Ser Leu Pro Met His Ala Gly Asn Ala Thr Tyr Asp Thr  
565 570 575

Gly Ser Ser Phe Val Ile Pro His Ile Asp His Ile His Val Val Pro  
580 585 590

Tyr Ser Trp Leu Thr Arg Asn Gln Ile Ala Thr Ile Lys Tyr Val Met  
595 600 605

Gln His Pro Glu Val Arg Pro Asp Val Trp Ser Lys Pro Gly His Glu  
610 615 620

Glu Ser Gly Ser Val Ile Pro Asn Val Thr Pro Leu Asp Lys Arg Ala  
625 630 635 640

Gly Met Pro Asn Trp Gln Ile Ile His Ser Ala Glu Glu Val Gln Lys  
645 650 655

Ala Leu Ala Glu Gly Arg Phe Ala Ala Pro Asp Gly Tyr Ile Phe Asp  
660 665 670

Pro Arg Asp Val Leu Ala Lys Glu Thr Phe Val Trp Lys Asp Gly Ser  
675 680 685

Phe Ser Ile Pro Arg Ala Asp Gly Ser Ser Leu Arg Thr Ile Asn Lys  
 690 695 700

Ser Asp Leu Ser Gln Ala Glu Trp Gln Gln Ala Gln Glu Leu Leu Ala  
 705 710 715 720

Lys Lys Asn Ala Gly Asp Ala Thr Asp Thr Asp Lys Pro Glu Glu Lys  
 725 730 735

Gln Gln Ala Asp Lys Ser Asn Glu Asn Gln Gln Pro Ser Glu Ala Ser  
 740 745 750

Lys Glu Glu Lys Glu Ser Asp Asp Phe Ile Asp Ser Leu Pro Asp Tyr  
 755 760 765

Gly Leu Asp Arg Ala Thr Leu Glu Asp His Ile Asn Gln Leu Ala Gln  
 770 775 780

Lys Ala Asn Ile Asp Pro Lys Tyr Leu Ile Phe Gln Pro Glu Gly Val  
 785 790 795 800

Gln Phe Tyr Asn Lys Asn Gly Glu Leu Val Thr Tyr Asp Ile Lys Thr  
 805 810 815

Leu Gln Gln Ile Asn Pro  
 820

<210> 19

<211> 939

<212> DNA

<213> Streptococcus agalactiae

<400> 19

atgatacgcc agtttttaag agaacacttg atttggata ttttatata catgatgtt 60  
 gtcctatttt ttatttagttt ctatctata catttaccaa tgccctattt gtttaattcc 120  
 tttagtttaa atgttattgt tttactagga attgttattt ggcaatacag tcgttacagg 180



Glu Ala Gln Lys Val Ser Glu Thr Ile Glu Gln Thr Asn His Val Ala  
100 105 110

Leu Met Ile Lys Met Trp Ser His Gln Met Lys Val Pro Leu Ala Ala  
115 120 125

Ile Ser Leu Met Ala Gln Thr Asn His Leu Asp Pro Lys Glu Val Glu  
130 135 140

Gln Gln Leu Leu Lys Leu Gln His Tyr Leu Glu Thr Leu Leu Ala Phe  
145 150 155 160

Leu Lys Phe Arg Gln Tyr Arg Asp Asp Phe Arg Phe Glu Ala Val Ser  
165 170 175

Leu Arg Glu Val Val Val Glu Ile Ile Lys Ser Tyr Lys Val Ile Cys  
180 185 190

Leu Ser Lys Ser Leu Ser Ile Ile Ile Glu Gly Asp Asn Ile Trp Lys  
195 200 205

Thr Asp Lys Lys Trp Leu Thr Phe Ala Leu Ser Gln Val Leu Asp Asn  
210 215 220

Ala Ile Lys Tyr Ser Asn Pro Glu Ser Lys Ile Ile Ser Ile Gly  
225 230 235 240

Glu Glu Ser Ile Arg Ile Gln Asp Tyr Gly Ile Gly Ile Leu Glu Glu  
245 250 255

Asp Ile Pro Arg Leu Phe Glu Asp Gly Phe Thr Gly Tyr Asn Gly His  
260 265 270

Glu His Gln Lys Ala Thr Gly Met Gly Leu Tyr Met Thr Lys Glu Val  
275 280 285

Leu Ser Ser Leu Asn Leu Ser Ile Ser Val Asp Ser Lys Ile Asn Tyr  
290 295 300

Gly Thr Ala Val Ser Ile His Lys

305

310

<210> 21

<211> 942

<212> DNA

<213> Streptococcus agalactiae

<400> 21

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 accacattaa aatctctctg tgcctatcat gagaatctct caattttat ttttaatcaa 120  
 gatattcctc aagaatggtt tttagctatg aaagataggg ttggacaaac tggaaatcaa 180  
 attcaggatg taaagcttcc ccatgatcac ttatccccaa aatgggaaaa taaaaagctt 240  
 aatcatatta attatatgac ctatgctgt tatttcatac ctcagtcacat ctcagctgat 300  
 acagtttat atcttgactc tgacttagtt gttactacta atttagataa cctctttcaa 360  
 atttcactag acaatgcata tttagctgca gttccagctc ttttggct tggatatggg 420  
 tttaatgctg gagtaatggt aattaacaac caacgttggc gacaagaaaa tatgactatt 480  
 aaattaattg aaaaaaaatca aaaggaaatt gagaatgcca acgaagggga tcaaacaatt 540  
 cttaatcgca tgtttggaaa tcaggttaatt tatttagatg atacctacaa ttttcaaatt 600  
 ggttttgata tgggagctgc tatcgatggg cataaattta ttttgcacat cccaaattacc 660  
 ccactccccaa aaatttattca ctacatttcg ggaatcaaac cttggcaaaac attatcaaatt 720  
 atgagactcc gtgaggtatg gtggcaactat aatttacttg aatggtcaag tatcatatct 780  
 agtaaaaaaaag tatttggttt agaccaccca attaaaacac aaaattatcg tctcaatttc 840  
 ctatttgcta caacttctga ttgtatacca tctatctcag aattagtcac tgcccttcca 900  
 gattgtctat ttcacattgc atgcaccaac agttatgtct ga 942

<210> 22

<211> 313

<212> PRT

<213> Streptococcus agalactiae

<400> 22

Met Thr Tyr Gln Lys Thr Val Val Leu Ala Gly Asp Tyr Ser Tyr Ile

1

5

10

15

Arg Gln Ile Glu Thr Thr Leu Lys Ser Leu Cys Val Tyr His Glu Asn  
20 25 30

Leu Ser Ile Phe Ile Phe Asn Gln Asp Ile Pro Gln Glu Trp Phe Leu  
35 40 45

Ala Met Lys Asp Arg Val Gly Gln Thr Gly Asn Gln Ile Gln Asp Val  
50 55 60

Lys Leu Phe His Asp His Leu Ser Pro Lys Trp Glu Asn Lys Lys Leu  
65 70 75 80

Asn His Ile Asn Tyr Met Thr Tyr Ala Arg Tyr Phe Ile Pro Gln Tyr  
85 90 95

Ile Ser Ala Asp Thr Val Leu Tyr Leu Asp Ser Asp Leu Val Val Thr  
100 105 110

Thr Asn Leu Asp Asn Leu Phe Gln Ile Ser Leu Asp Asn Ala Tyr Leu  
115 120 125

Ala Ala Val Pro Ala Leu Phe Gly Leu Gly Tyr Gly Phe Asn Ala Gly  
130 135 140

Val Met Val Ile Asn Asn Gln Arg Trp Arg Gln Glu Asn Met Thr Ile  
145 150 155 160

Lys Leu Ile Glu Lys Asn Gln Lys Glu Ile Glu Asn Ala Asn Glu Gly  
165 170 175

Asp Gln Thr Ile Leu Asn Arg Met Phe Glu Asn Gln Val Ile Tyr Leu  
180 185 190

Asp Asp Thr Tyr Asn Phe Gln Ile Gly Phe Asp Met Gly Ala Ala Ile  
195 200 205

Asp Gly His Lys Phe Ile Phe Asp Ile Pro Ile Thr Pro Leu Pro Lys  
210 215 220

Ile Ile His Tyr Ile Ser Gly Ile Lys Pro Trp Gln Thr Leu Ser Asn  
 225 230 235 240

Met Arg Leu Arg Glu Val Trp Trp His Tyr Asn Leu Leu Glu Trp Ser  
 245 250 255

Ser Ile Ile Ser Ser Lys Lys Val Phe Gly Leu Asp His Pro Ile Lys  
 260 265 270

Thr Gln Asn Tyr Arg Leu Asn Phe Leu Ile Ala Thr Thr Ser Asp Cys  
 275 280 285

Ile Pro Ser Ile Ser Glu Leu Val Thr Ala Leu Pro Asp Cys Leu Phe  
 290 295 300

His Ile Ala Cys Thr Asn Ser Tyr Val  
 305 310

<210> 23

<211> 1146

<212> DNA

<213> Streptococcus agalactiae

<400> 23

gtgaagaaaa catattgtta tatcggtca gttgctgcta ttttacttagc tactcatatt 60  
 ggaagttacc agcttggtaa gcatcatatg ggtctagcaa caaaggacaa tcagattgcc 120  
 tatattgatg atagcaaagg taaggtaaaa gcccttaaaa caaacaaaac gatggatcaa 180  
 atcagtgctg aagaaggcat ctctgctgaa cagatcgtag tcaaaaattac tgaccaaggt 240  
 tatgttacct cacacggta ccattatcat ttttacaatg ggaaagtcc ttatgatgctg 300  
 attattatgt aagagttgtt gatgacggat cctaattacc attttaaaca atcagacgtt 360  
 atcaatgaaa tcttagacgg ttacgttatt aaagtcaatg gcaactatta tgtttacctc 420  
 aagccaggtta gtaagcgaa aaacattcga accaaacaac aaattgctga gcaagtagcc 480  
 aaaggaacta aagaagctaa agaaaaaggt ttagctcaag tggcccatct cagtaaagaa 540  
 gaagttgcgg cagtcaatga agcaaaaaga caaggacgct atactacaga cgatggctat 600  
 atttttatgtc cgacagatat cattgatgtat ttaggagatg cttatattgt acctcatgg 660  
 aatcaatcatttcc taaaaaagat ttgtctccaa gtgagctagc tgctgcacaa 720

gcctactgga gtcaaaaaca aggtcgagggt gctagaccgt ctgattaccg cccgacacca 780  
 gccccaggc gtaggaaagc cccacttcct gatgtgacgc ctaaccctgg acaaggtcat 840  
 cagccagata acgggtggta tcatccagcg cctccctaggc caaatgatgc gtcacaaaac 900  
 aaacaccaaa gagatgagtt taaaggaaaa acctttaagg aacttttaga tcaactacac 960  
 cgtcttgatt taaaataccg tcatgtggaa gaagatgggt tgattttga accgactcaa 1020  
 gtgatcaaat caaacgcttt tggtatgtg gtgcctcatg gagatcatta tcatattatc 1080  
 ccaagaagtc agttatcacc tcttggaaatg gaattagcag atcgatactt aaccggcca 1140  
 aactga

1146

&lt;210&gt; 24

&lt;211&gt; 381

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 24

Met Lys Lys Thr Tyr Cys Tyr Ile Gly Ser Val Ala Ala Ile Leu Leu

1

5

10

15

Ala Thr His Ile Gly Ser Tyr Gln Leu Gly Lys His His Met Gly Leu

20

25

30

Ala Thr Lys Asp Asn Gln Ile Ala Tyr Ile Asp Asp Ser Lys Gly Lys

35

40

45

Val Lys Ala Pro Lys Thr Asn Lys Thr Met Asp Gln Ile Ser Ala Glu

50

55

60

Glu Gly Ile Ser Ala Glu Gln Ile Val Val Lys Ile Thr Asp Gln Gly

65

70

75

80

Tyr Val Thr Ser His Gly Asp His Tyr His Phe Tyr Asn Gly Lys Val

85

90

95

Pro Tyr Asp Ala Ile Ile Ser Glu Glu Leu Leu Met Thr Asp Pro Asn

100

105

110

Tyr His Phe Lys Gln Ser Asp Val Ile Asn Glu Ile Leu Asp Gly Tyr  
115 120 125

Val Ile Lys Val Asn Gly Asn Tyr Tyr Val Tyr Leu Lys Pro Gly Ser  
130 135 140

Lys Arg Lys Asn Ile Arg Thr Lys Gln Gln Ile Ala Glu Gln Val Ala  
145 150 155 160

Lys Gly Thr Lys Glu Ala Lys Glu Lys Gly Leu Ala Gln Val Ala His  
165 170 175

Leu Ser Lys Glu Glu Val Ala Ala Val Asn Glu Ala Lys Arg Gln Gly  
180 185 190

Arg Tyr Thr Thr Asp Asp Gly Tyr Ile Phe Ser Pro Thr Asp Ile Ile  
195 200 205

Asp Asp Leu Gly Asp Ala Tyr Leu Val Pro His Gly Asn His Tyr His  
210 215 220

Tyr Ile Pro Lys Lys Asp Leu Ser Pro Ser Glu Leu Ala Ala Ala Gln  
225 230 235 240

Ala Tyr Trp Ser Gln Lys Gln Gly Arg Gly Ala Arg Pro Ser Asp Tyr  
245 250 255

Arg Pro Thr Pro Ala Pro Gly Arg Arg Lys Ala Pro Leu Pro Asp Val  
260 265 270

Thr Pro Asn Pro Gly Gln Gly His Gln Pro Asp Asn Gly Gly Tyr His  
275 280 285

Pro Ala Pro Pro Arg Pro Asn Asp Ala Ser Gln Asn Lys His Gln Arg  
290 295 300

Asp Glu Phe Lys Gly Lys Thr Phe Lys Glu Leu Leu Asp Gln Leu His  
305 310 315 320

Arg Leu Asp Leu Lys Tyr Arg His Val Glu Glu Asp Gly Leu Ile Phe  
325 330 335

Glu Pro Thr Gln Val Ile Lys Ser Asn Ala Phe Gly Tyr Val Val Pro  
340 345 350

His Gly Asp His Tyr His Ile Ile Pro Arg Ser Gln Leu Ser Pro Leu  
355 360 365

Glu Met Glu Leu Ala Asp Arg Tyr Leu Thr Arg Pro Asn  
370 375 380

<210> 25

<211> 660

<212> DNA

<213> Streptococcus agalactiae

<400> 25

atggtaaatg atatattaga aagaatgtat aaagagaata ttccaaaatc ttaccttaca 60  
tccgtcccat tagtatttc tcaaaaagga agaacaacct attcgtttag tatgactgg 120  
ggtcaacaaa tagatggagt gaaattcaca cagatatacg aggactatacgaaattactc 180  
agtcaaggta agatatacg agatgtatcaaaaaatatt ctaaagaaga gttggcaa 240  
ctaggcatta atatttatca atccaatgtat atagaagga ctgaggaaag aactttgtat 300  
gaaattatca gttgggttca caacccttat gcaacaagac caattcaaga aaggcacact 360  
attcaattatca agccaaacaag attttcaacta gaggataaga aaagaatttga agaagctgca 420  
gctcaaggac taagcgaaat cgaccttatt gatttagttg acctataatga tattaattta 480  
gacaatacaa gcgtcaatcg ccatttgcg gggttattga ctaataacac ccaagtaaca 540  
tactatttcc aagaacaatt aaataaggag ttgcgtcaa tggctcacgc tttagataac 600  
gtacaacagg cctttattaa attattaatgtt gaagaggaga tacgaaaatt tgctctttaa 660

<210> 26

<211> 219

<212> PRT

<213> Streptococcus agalactiae

&lt;400&gt; 26

Met Val Asn Asp Ile Leu Glu Arg Met Tyr Lys Glu Asn Ile Pro Lys  
1 5 10 15

Ser Tyr Leu Thr Ser Val Pro Leu Val Ile Ser Gln Lys Gly Arg Thr  
20 25 30

Thr Tyr Ser Phe Ser Met Thr Gly Gly Gln Gln Ile Asp Gly Val Lys  
35 40 45

Phe Thr Gln Ile Tyr Glu Asp Tyr Met Lys Leu Leu Ser Gln Gly Lys  
50 55 60

Asp Ile Ala Glu Leu Tyr Gln Lys Tyr Ser Lys Glu Glu Leu Ala Asn  
65 70 75 80

Leu Gly Ile Asn Ile Tyr Gln Ser Asn Asp Ile Glu Arg Thr Glu Glu  
85 90 95

Arg Thr Phe Asp Glu Ile Ile Ser Trp Val Ser Asn Pro Tyr Ala Thr  
100 105 110

Arg Pro Ile Gln Glu Arg His Thr Ile Gln Leu Glu Pro Thr Arg Phe  
115 120 125

Ser Leu Glu Asp Lys Lys Arg Ile Glu Glu Ala Ala Gln Gly Leu  
130 135 140

Ser Glu Ile Asp Leu Ile Asp Leu Val Asp Leu Tyr Asp Ile Asn Leu  
145 150 155 160

Asp Asn Thr Ser Val Asn Arg His Ile Val Gly Leu Leu Thr Asn Asn  
165 170 175

Thr Gln Val Thr Tyr Tyr Phe Gln Glu Gln Leu Asn Lys Glu Leu Leu  
180 185 190

Ser Met Ala His Ala Leu Asp Asn Val Gln Gln Ala Phe Ile Lys Leu  
 195 200 205

Leu Ser Glu Glu Glu Ile Arg Lys Phe Ala Leu  
 210 215

<210> 27

<211> 653

<212> DNA

<213> Streptococcus agalactiae

<400> 27

atgaataaaa gaagaaaaatt atcaaaaattg aatgtaaaaaa aacaacattt agcttatgga 60  
 gctatcactt tagtagccct tttttcatgt attttggctg taacggtcat cttaaaaagt 120  
 tcacaagtta ctactgaatc tttgtcaaaa gcagataaaag ttcgcgttagc caaaaaatca 180  
 aaaaatgacta aggcgacatc taaatcaaaa gtagaaagatg taaaacaggc tccaaaacct 240  
 tctcaggcat ctaatgaagc cccaaaatca agttctcaat ctacagaagc taattctcag 300  
 caacaagtta ctgcgagtga agaggcggct gtagaacaag cagttgtAAC agaaaataacc 360  
 octgctacca gtcaggcaca acaaacttat gctgttactg agacaactta caaacctgct 420  
 caacaccaga caagtggcca agtattgagc aatggaaata ctgcaggggc ggtcggatct 480  
 gctgctgcag cacaatggc tgctgcaaca ggagtccctc agtctacttg ggaacatatt 540  
 attgcccgtg aatcaaatgg taatcctaattt gttgctaattt cctcaggggc ttcaaggactt 600  
 ttccaaacga tgccaggttg gggttcaaca gctacagttc aggatcaagt taa 653

<210> 28

<211> 234

<212> PRT

<213> Streptococcus agalactiae

<400> 28

Met Asn Lys Arg Arg Lys Leu Ser Lys Leu Asn Val Lys Lys Gln His  
 1 5 10 15

Leu Ala Tyr Gly Ala Ile Thr Leu Val Ala Leu Phe Ser Cys Ile Leu  
 20 25 30

Ala Val Thr Val Ile Phe Lys Ser Ser Gln Val Thr Thr Glu Ser Leu  
35 40 45

Ser Lys Ala Asp Lys Val Arg Val Ala Lys Lys Ser Lys Met Thr Lys  
50 55 60

Ala Thr Ser Lys Ser Lys Val Glu Asp Val Lys Gln Ala Pro Lys Pro  
65 70 75 80

Ser Gln Ala Ser Asn Glu Ala Pro Lys Ser Ser Ser Gln Ser Thr Glu  
85 90 95

Ala Asn Ser Gln Gln Gln Val Thr Ala Ser Glu Glu Ala Ala Val Glu  
100 105 110

Gln Ala Val Val Thr Glu Asn Thr Pro Ala Thr Ser Gln Ala Gln Gln  
115 120 125

Thr Tyr Ala Val Thr Glu Thr Thr Tyr Lys Pro Ala Gln His Gln Thr  
130 135 140

Ser Gly Gln Val Leu Ser Asn Gly Asn Thr Ala Gly Ala Val Gly Ser  
145 150 155 160

Ala Ala Ala Ala Gln Met Ala Ala Ala Thr Gly Val Pro Gln Ser Thr  
165 170 175

Trp Glu His Ile Ile Ala Arg Glu Ser Asn Gly Asn Pro Asn Val Ala  
180 185 190

Asn Ala Ser Gly Ala Ser Gly Leu Phe Gln Thr Met Pro Gly Trp Gly  
195 200 205

Ser Thr Ala Thr Val Gln Asp Gln Val Asn Ser Ala Ile Lys Ala Tyr  
210 215 220

Arg Ala Gln Gly Leu Ser Ala Trp Gly Tyr  
225 230

<210> 29

<211> 360

<212> DNA

<213> *Streptococcus agalactiae*

<400> 29

atgattgtt gacacggaat tgatttacaa gagatagagg cgattactaa agcatatgag 60  
cgtaatcaac gtttgcaga acgcgtttt accqaacaag aattgcttct ttttaaagga 120  
atttccaatc ccaagcgtca gatgtcttt ttaacaggc gatgggcagc aaaagaggct 180  
tatacgaaag cacttggAAC aggaattggg aaagttaatt ttcatgatat cgaaatttta 240  
tcggatgata aaggagcgcc tttgattaca aaagaaccgt ttaatggaaa atctttgtt 300  
tcaatatctc atagtggtaa ttatgcacaa gctagtgtt aTTTggagga agaaaaatga 360

<210> 30

<211> 119

<212> PRT

<213> *Streptococcus agalactiae*

<400> 30

Met Ile Val Gly His Gly Ile Asp Leu Gln Glu Ile Glu Ala Ile Thr

1

5

10

15

Lys Ala Tyr Glu Arg Asn Gln Arg Phe Ala Glu Arg Val Leu Thr Glu

20

25

30

Gln Glu Leu Leu Leu Phe Lys Gly Ile Ser Asn Pro Lys Arg Gln Met

35

40

45

Ser Phe Leu Thr Gly Arg Trp Ala Ala Lys Glu Ala Tyr Ser Lys Ala

50

55

60

Leu Gly Thr Gly Ile Gly Lys Val Asn Phe His Asp Ile Glu Ile Leu

65

70

75

80

Ser Asp Asp Lys Gly Ala Pro Leu Ile Thr Lys Glu Pro Phe Asn Gly  
 85 90 95

Lys Ser Phe Val Ser Ile Ser His Ser Gly Asn Tyr Ala Gln Ala Ser  
 100 105 110

Val Ile Leu Glu Glu Glu Lys  
 115

<210> 31  
 <211> 474  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 31  
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 gatagattaa aaggcacagg tgctattgtt caagaagtgt tcattcaaac gggttactca 120  
 gacttcgaac ctcagaatttgc tcagtggtca aaatttctct catatgatga tatgaactct 180  
 tacatgaaag aagctgagat tgttatcaca catggcggcc cagcgcacgtt tatgtcagtt 240  
 atttcttttag ggaaattacc agttgttggt cctaggagaa agcagttgg tgaacatatc 300  
 aatgatcatc aaatacaatt tttaaaaaaa attgcccacc tttatccctt ggcttggatt 360  
 gaagatgttag atggacttgc ggaagcgttg aaaaggaata tagctacaga aaaatatcag 420  
 gggaaataatg atatgttttg tcataaatttta gaaaaaatttta taggtgaaat atga 474

<210> 32  
 <211> 157  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 32  
 Met Ile Phe Val Thr Val Gly Thr His Glu Gln Gln Phe Asn Arg Leu  
 1 5 10 15

Ile Lys Glu Val Asp Arg Leu Lys Gly Thr Gly Ala Ile Asp Gln Glu  
 20 25 30

Val Phe Ile Gln Thr Gly Tyr Ser Asp Phe Glu Pro Gln Asn Cys Gln  
 35 40 45

Trp Ser Lys Phe Leu Ser Tyr Asp Asp Met Asn Ser Tyr Met Lys Glu  
 50 55 60

Ala Glu Ile Val Ile Thr His Gly Gly Pro Ala Thr Phe Met Ser Val  
 65 70 75 80

Ile Ser Leu Gly Lys Leu Pro Val Val Val Pro Arg Arg Lys Gln Phe  
 85 90 95

Gly Glu His Ile Asn Asp His Gln Ile Gln Phe Leu Lys Lys Ile Ala  
 100 105 110

His Leu Tyr Pro Leu Ala Trp Ile Glu Asp Val Asp Gly Leu Ala Glu  
 115 120 125

Ala Leu Lys Arg Asn Ile Ala Thr Glu Lys Tyr Gln Gly Asn Asn Asp  
 130 135 140

Met Phe Cys His Lys Leu Glu Lys Ile Ile Gly Glu Ile  
 145 150 155

<210> 33

<211> 1203

<212> DNA

<213> *Streptococcus agalactiae*

<400> 33

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 tatatggctt attatttgtt caccgttatac atagctttta ttgcgactaa agagtttaggt 120  
 gttagcacta gccaagcagg attagcaacg gggatttata ttgttagggac tttgattgct 180  
 cgtcttatat ttggtaagca attagaagtt ctaggacgta agtttagttt acgtggaggg 240  
 gctatttttt acttactaac aacttttagct tattttata tgccaagtat cggagtaatg 300  
 tatttagttc gtttcctaaa tggtttttgtt tatggcgtcg tgtcaacagc aactaatact 360

attgtaacag cctatataacc agctgataaa agaggtgagg ggattaactt ttacggctca 420  
 tcaacaagtt tagccgcagc tattggctct ttttaggaa catttatgct agacaaccc 480  
 cataattaact ttaaaatggt tattgttatta tgttagtattt taattgcgtat tgttagtgg 540  
 ggagcatttg ttttcccagt caaaaatatt actttaaatc cagaacagtt agctaaatca 600  
 aatcatgga ctattgatag tttcattttag aaaaaagcaa tttttatcac aattattgca 660  
 tttttgatgg gtatctccta tgcttccgtg ttaggttcc aaaaattata tacaacagaa 720  
 attaatttga tgacagtagg agcttatttc tttattgttt atgcacttgt catcacttta 780  
 accagaccat ctatggaaag attaatggac gctaagggag ataagtgggt gctttatcca 840  
 agttatctgt tcttaacttt gggacttgct ttatttaggaa gtgctatggg aagtgttacc 900  
 taccttctat caggtgcttt gattgggttt ggttatggca cctttatgtc ttgtggccaa 960  
 gcagcatcaa tcaaagggtgt tgaggaacat cgtttcaata cagccatgtc aacttacatg 1020  
 ataggtcttg atttagggtt aggtgctgga ctttacattt tgggacttgt taaagatgg 1080  
 tttcttggag ctgggttgca atcctttaga gaattattct ggatagcagc gattattcct 1140  
 gttgtttgtg gtattctata tttcttaaaa tcattctagac aagttgaaac taaaactata 1200  
 taa 1203

<210> 34

<211> 400

<212> PRT

<213> Streptococcus agalactiae

<400> 34

Met Glu Asp Lys Leu Phe Asn Lys His Phe Ile Gly Ile Thr Ile Leu  
 1 5 10 15

Asn Phe Ile Val Tyr Met Val Tyr Tyr Leu Phe Thr Val Ile Ile Ala  
 20 25 30

Phe Ile Ala Thr Lys Glu Leu Gly Val Ser Thr Ser Gln Ala Gly Leu  
 35 40 45

Ala Thr Gly Ile Tyr Ile Val Gly Thr Leu Ile Ala Arg Leu Ile Phe  
 50 55 60

Gly Lys Gln Leu Glu Val Leu Gly Arg Lys Leu Val Leu Arg Gly Gly  
 65 70 75 80

Ala Ile Phe Tyr Leu Leu Thr Thr Leu Ala Tyr Phe Tyr Met Pro Ser  
85 90 95

Ile Gly Val Met Tyr Leu Val Arg Phe Leu Asn Gly Phe Gly Tyr Gly  
100 105 110

Val Val Ser Thr Ala Thr Asn Thr Ile Val Thr Ala Tyr Ile Pro Ala  
115 120 125

Asp Lys Arg Gly Glu Gly Ile Asn Phe Tyr Gly Leu Ser Thr Ser Leu  
130 135 140

Ala Ala Ala Ile Gly Pro Phe Val Gly Thr Phe Met Leu Asp Asn Leu  
145 150 155 160

His Ile Asn Phe Lys Met Val Ile Val Leu Cys Ser Ile Leu Ile Ala  
165 170 175

Ile Val Val Leu Gly Ala Phe Val Phe Pro Val Lys Asn Ile Thr Leu  
180 185 190

Asn Pro Glu Gln Leu Ala Lys Ser Lys Ser Trp Thr Ile Asp Ser Phe  
195 200 205

Ile Glu Lys Lys Ala Ile Phe Ile Thr Ile Ile Ala Phe Leu Met Gly  
210 215 220

Ile Ser Tyr Ala Ser Val Leu Gly Phe Gln Lys Leu Tyr Thr Thr Glu  
225 230 235 240

Ile Asn Leu Met Thr Val Gly Ala Tyr Phe Phe Ile Val Tyr Ala Leu  
245 250 255

Val Ile Thr Leu Thr Arg Pro Ser Met Gly Arg Leu Met Asp Ala Lys  
260 265 270

Gly Asp Lys Trp Val Leu Tyr Pro Ser Tyr Leu Phe Leu Thr Leu Gly  
275 280 285

Leu Ala Leu Leu Gly Ser Ala Met Gly Ser Val Thr Tyr Leu Leu Ser  
290 295 300

Gly Ala Leu Ile Gly Phe Gly Tyr Gly Thr Phe Met Ser Cys Gly Gln  
305 310 315 320

Ala Ala Ser Ile Lys Gly Val Glu Glu His Arg Phe Asn Thr Ala Met  
325 330 335

Ser Thr Tyr Met Ile Gly Leu Asp Leu Gly Leu Gly Ala Gly Pro Tyr  
340 345 350

Ile Leu Gly Leu Val Lys Asp Gly Phe Leu Gly Ala Gly Val Gln Ser  
355 360 365

Phe Arg Glu Leu Phe Trp Ile Ala Ala Ile Ile Pro Val Val Cys Gly  
370 375 380

Ile Leu Tyr Phe Leu Lys Ser Ser Arg Gln Val Glu Thr Lys Thr Ile  
385 390 395 400

<210> 35

<211> 393

<212> DNA

<213> Streptococcus agalactiae

<400> 35

atgaatagtg aacctaaaag tcagtcaaac gaagtaaaaa atagcaagca atcagaagtg 60  
aagaaagata aaaaaatgac aaaaaaagaa caatttagcct atctcaaaga gcatgagcaa 120  
gaaatcatag attatgtaaa attacataac aaccaaattg agtccgttca attcgattgg 180  
tcaagtgtaa aagtagaaca aagcgggaat ggaactccac aagggggtga ttataatctt 240  
tcactgagag gaaagttaa tcatctacaa aattcaaaaat taatagttga tttttattta 300  
gctcataaaa atgatatccc aaatatcaaa tcaatggaa tgctaaataa gccatatata 360

cataaaaaatg gtatttggca catttatgaa tag

393

&lt;210&gt; 36

&lt;211&gt; 137

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 36

Met Ile Leu Gly Gly Cys Gln Met Asn Ser Glu Pro Lys Ser Gln Ser

1

5

10

15

Asn Glu Val Lys Asn Ser Lys Gln Ser Glu Val Lys Lys Asp Lys Lys

20

25

30

Met Thr Lys Lys Glu Gln Leu Ala Tyr Leu Lys Glu His Glu Gln Glu

35

40

45

Ile Ile Asp Tyr Val Lys Leu His Asn Asn Gln Ile Glu Ser Val Gln

50

55

60

Phe Asp Trp Ser Ser Val Lys Val Glu Gln Ser Gly Asn Gly Thr Pro

65

70

75

80

Gln Gly Asp Tyr Asn Leu Ser Leu Arg Gly Lys Phe Asn His Leu

85

90

95

Gln Asn Ser Lys Leu Ile Val Asp Phe Tyr Leu Ala His Lys Asn Asp

100

105

110

Ile Pro Asn Ile Lys Ser Met Gly Met Leu Asn Lys Pro Tyr Ile His

115

120

125

Lys Asn Gly Ile Trp His Ile Tyr Glu

130

135

&lt;210&gt; 37

&lt;211&gt; 927

&lt;212&gt; DNA

<213> *Streptococcus agalactiae*

&lt;400&gt; 37

atgaaaaaga ttgcattatc aaagtttattt aaaaatgattt ttgttatttt gtttttaattt 60  
 agttagcag ctagtttta tttttccac gttgcccag ttgcagatga taaatccctt 120  
 atttcaaatg gtcaacgtaa gcctggaaac tctttatatg cttatgataa atcctttgat 180  
 aagctttaaa agcaaaaaat agaaatgaca aaccaaaaata taaagcaagt tgcttggat 240  
 gttcctgctg ctaagaaaac tcataagaca gttgttgcg ttcatggtt tgcaatagc 300  
 aaagagaata tgaaggcata tggttggctg tttcataagt taggatacaa tggcttatg 360  
 cctgacaaca ttgcacatgg tgaaagtcat gggcagttga taggctatgg ctggAACGAC 420  
 cgcgagaaca ttatcaaattt gacagaaatg atagtggata agaatccatc aagccaaattt 480  
 acttttattt gttttcaat gggtggagca acagtcatga tggctagtgg tgaaaaattt 540  
 cctagtcagg ttgttaatattt cattgaagat tgggttattt ctagtggatggatgaaat 600  
 aaatttcagg ctaaagagat gtatggttt ccagccttcc cactcttata tgaagtttca 660  
 acaatttcata aaatcagagc aggttttcg tatggacaag caagtagtgtt cgaacaattt 720  
 aaaaagaata atttaccagc ccttttattt catgggtata aggataattt tggccaaaca 780  
 agttaggttt atgacacaacta taaagctaca gcaggttaaga aagagcttta tattgtaaaa 840  
 ggggcaaaaac atgcgaaatc ttttggaaaca gagccagaaa aatatgagaa acgtatctct 900  
 agttttttaa aaaaatatga aaaataa 927

&lt;210&gt; 38

&lt;211&gt; 308

&lt;212&gt; PRT

<213> *Streptococcus agalactiae*

&lt;400&gt; 38

Met Lys Lys Ile Arg Leu Ser Lys Phe Ile Lys Met Ile Val Val Ile  
 1 5 10 15

Leu Phe Leu Ile Ser Val Ala Ala Ser Phe Tyr Phe Phe His Val Ala  
 20 25 30

Gln Val Arg Asp Asp Lys Ser Phe Ile Ser Asn Gly Gln Arg Lys Pro

35

40

45

Gly Asn Ser Leu Tyr Ala Tyr Asp Lys Ser Phe Asp Lys Leu Leu Lys  
50 55 60

Gln Lys Ile Glu Met Thr Asn Gln Asn Ile Lys Gln Val Ala Trp Tyr  
65 70 75 80

Val Pro Ala Ala Lys Lys Thr His Lys Thr Val Val Val His Gly  
85 90 95

Phe Ala Asn Ser Lys Glu Asn Met Lys Ala Tyr Gly Trp Leu Phe His  
100 105 110

Lys Leu Gly Tyr Asn Val Leu Met Pro Asp Asn Ile Ala His Gly Glu  
115 120 125

Ser His Gly Gln Leu Ile Gly Tyr Gly Trp Asn Asp Arg Glu Asn Ile  
130 135 140

Ile Lys Trp Thr Glu Met Ile Val Asp Lys Asn Pro Ser Ser Gln Ile  
145 150 155 160

Thr Leu Phe Gly Val Ser Met Gly Gly Ala Thr Val Met Met Ala Ser  
165 170 175

Gly Glu Lys Leu Pro Ser Gln Val Val Asn Ile Ile Glu Asp Cys Gly  
180 185 190

Tyr Ser Ser Val Trp Asp Glu Leu Lys Phe Gln Ala Lys Glu Met Tyr  
195 200 205

Gly Leu Pro Ala Phe Pro Leu Leu Tyr Glu Val Ser Thr Ile Ser Lys  
210 215 220

Ile Arg Ala Gly Phe Ser Tyr Gly Gln Ala Ser Ser Val Glu Gln Leu  
225 230 235 240

Lys Lys Asn Asn Leu Pro Ala Leu Phe Ile His Gly Asp Lys Asp Asn  
245 250 255

Phe Val Pro Thr Ser Met Val Tyr Asp Asn Tyr Lys Ala Thr Ala Gly  
260 265 270

Lys Lys Glu Leu Tyr Ile Val Lys Gly Ala Lys His Ala Lys Ser Phe  
275 280 285

Glu Thr Glu Pro Glu Lys Tyr Glu Lys Arg Ile Ser Ser Phe Leu Lys  
290 295 300

Lys Tyr Glu Lys  
305

<210> 39

<211> 546

<212> DNA

<213> Streptococcus agalactiae

<400> 39

ttgaggagta atatggtaaa gacagcagtt ttaatggcga cataacaatgg cgaaaaattt 60  
atatctgaac aacttgattc aattcgccaa cagacattaa aaccagatta tgtattattg 120  
agggatgatt gtcaacgga tgaaacagtc aatgtcgta ataactatat cgcaaaacat 180  
gagttagaag gctggaaaat tgtaaaaac gacaaaaact taggctggcg tttaaatttt 240  
cgtcaattac ttattgatgt gttagccat gaggttgact atgtctttt tagtgatcaa 300  
gatgatattt ggtatcttga taaaaacgaa cgacagtttgc ccattatgtc agataaccct 360  
caaattgagg ttttgagtgc agacggttgc atcaaaaacga tgtctacaga agccagtgtt 420  
ccacatttgc taacttttgc ttcttagtgc agaatcagtc agtacccaa agtataatgtat 480  
tatcaaacat tccgtcccggtt atggaccatt gctatgaaga gagattttgc gcaagctatc 540  
gcttga 546

<210> 40

<211> 181

<212> PRT

<213> Streptococcus agalactiae

<400> 40

Met Arg Ser Asn Met Val Lys Thr Ala Val Leu Met Ala Thr Tyr Asn

1 5 10 15

Gly Glu Lys Phe Ile Ser Glu Gln Leu Asp Ser Ile Arg Gln Gln Thr

20 25 30

Leu Lys Pro Asp Tyr Val Leu Leu Arg Asp Asp Cys Ser Thr Asp Glu

35 40 45

Thr Val Asn Val Val Asn Asn Tyr Ile Ala Lys His Glu Leu Glu Gly

50 55 60

Trp Lys Ile Val Lys Asn Asp Lys Asn Leu Gly Trp Arg Leu Asn Phe

65 70 75 80

Arg Gln Leu Leu Ile Asp Val Leu Ala Tyr Glu Val Asp Tyr Val Phe

85 90 95

Phe Ser Asp Gln Asp Asp Ile Trp Tyr Leu Asp Lys Asn Glu Arg Gln

100 105 110

Phe Ala Ile Met Ser Asp Asn Pro Gln Ile Glu Val Leu Ser Ala Asp

115 120 125

Val Asp Ile Lys Thr Met Ser Thr Glu Ala Ser Val Pro His Phe Leu

130 135 140

Thr Phe Ser Ser Ser Asp Arg Ile Ser Gln Tyr Pro Lys Val Tyr Asp

145 150 155 160

Tyr Gln Thr Phe Arg Pro Gly Trp Thr Ile Ala Met Lys Arg Asp Phe

165 170 175

Ala Gln Ala Ile Ala

180

<210> 41

<211> 579

<212> DNA

<213> *Streptococcus agalactiae*

<400> 41

atgattcatg agattcacga ttgtcaattt attaaaaag gaagttacgt ttatggat 60  
 tatattaatg ctgagggcga gagagtagtt attataatca tagattttgt ccgttagtgg 120  
 agtcctatattt tatatcgctt atttatgatt ttacttgcac aagaagtacc tcacttgcac 180  
 gattacatct ataatgcac agatgatcac tacgataactt ggaagttaa agaattaaag 240  
 gagtcaaaacc atccagtcct tttggcattc tctgaaagggt ggcacgatag tcgcttgact 300  
 tctaaaagcc ttgcagaatg tttacaatattt accgacccctt atgaagaagt gaaatcgacc 360  
 atcattcaat taagacagtt cggaaatca gtcagaaatc ctttggctca cctgattaaa 420  
 ctttttgatg agcaagaact atatcgatca actcaatttt cttctcaagc attttttagac 480  
 cagattatct ttttggcaaa ggttaattgggt gttgagttatg atactgttaa ttttcaactac 540  
 gatacggta acaagcttat tataaagata cttgagtaa 579

<210> 42

<211> 192

<212> PRT

<213> *Streptococcus agalactiae*

<400> 42

Met Ile His Glu Ile His Asp Cys Gln Phe Ile Glu Lys Gly Ser Tyr

1

5

10

15

Val Tyr Leu Asn Tyr Ile Asn Ala Glu Gly Glu Arg Val Val Ile Ile

20

25

30

Ile Ile Asp Phe Val Arg Ser Val Ser Pro Ile Leu Tyr Arg Leu Phe

35

40

45

Met Ile Leu Leu Ala Gln Glu Val Pro His Leu His Asp Tyr Ile Tyr  
 50 55 60

Asn Ala Arg Asp Asp His Tyr Asp Thr Trp Lys Phe Lys Glu Leu Lys  
 65 70 75 80

Glu Ser Asn His Pro Val Leu Leu Ala Phe Ser Glu Arg Trp His Asp  
 85 90 95

Ser Arg Leu Thr Ser Leu Ala Glu Cys Leu Gln Leu Thr Asp  
 100 105 110

Leu Asp Glu Glu Val Lys Ser Thr Ile Ile Gln Leu Arg Gln Phe Glu  
 115 120 125

Lys Ser Val Arg Asn Pro Leu Ala His Leu Ile Lys Pro Phe Asp Glu  
 130 135 140

Gln Glu Leu Tyr Arg Thr Thr Gln Phe Ser Ser Gln Ala Phe Leu Asp  
 145 150 155 160

Gln Ile Ile Phe Leu Ala Lys Val Ile Gly Val Glu Tyr Asp Thr Val  
 165 170 175

Asn Phe His Tyr Asp Thr Val Asn Lys Leu Ile Lys Ile Leu Glu  
 180 185 190

<210> 43

<211> 465

<212> DNA

<213> Streptococcus agalactiae

<400> 43

atggtaaaag tttcaaattt agggtatcca cgtctgggtg aacagcgcga atggaagcaa 60  
 gcgatcgaag ctttctgggc aggaaatctt gaacaaaaag attttagaaaa acaactaaaa 120  
 caattacgta tcaatcattt aaagaaacaa aaagaggcag gtattgacct tattccagtg 180

ggggattttt cttgttatga tcatgtttt gatttgcattt tcataattcaa tgtaatccca 240  
aagcgtttcg atgaggtatga gaggaattta gaccttattt ttgctattgc aagaggtgac 300  
aaagataatg tcgcattatc tatgaaaaag tggtttaata ccaactacca ctacatagtc 360  
ccagaatggg aggttgagac taaacctcac ttgcagaata attacttact tgatcttat 420  
ctagaagcta gggaaatgtt tggtgataaa gcaaagccgg ttatc 465

<210> 44

<211> 159

<212> PRT

<213> Streptococcus agalactiae

<400> 44

Met Glu Glu Ile Met Val Lys Val Ser Asn Leu Gly Tyr Pro Arg Leu  
1 5 10 15

Gly Glu Gln Arg Glu Trp Lys Gln Ala Ile Glu Ala Phe Trp Ala Gly  
20 25 30

Asn Leu Glu Gln Lys Asp Leu Glu Lys Gln Leu Lys Gln Leu Arg Ile  
35 40 45

Asn His Leu Lys Lys Gln Lys Glu Ala Gly Ile Asp Leu Ile Pro Val  
50 55 60

Gly Asp Phe Ser Cys Tyr Asp His Val Leu Asp Leu Ser Phe Gln Phe  
65 70 75 80

Asn Val Ile Pro Lys Arg Phe Asp Glu Tyr Glu Arg Asn Leu Asp Leu  
85 90 95

Tyr Phe Ala Ile Ala Arg Gly Asp Lys Asp Asn Val Ala Ser Ser Met  
100 105 110

Lys Lys Trp Phe Asn Thr Asn Tyr His Tyr Ile Val Pro Glu Trp Glu  
115 120 125

Val Glu Thr Lys Pro His Leu Gln Asn Asn Tyr Leu Leu Asp Leu Tyr  
130 135 140

Leu Glu Ala Arg Glu Val Val Gly Asp Lys Ala Lys Pro Val Ile  
145 150 155

<210> 45

<211> 124

<212> DNA

<213> Streptococcus agalactiae

<400> 45

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ataaacgatac tgacaaaaat aaaatgttac cagatatgga ggaaggagaa agttatcaag 120  
ttaa 124

<210> 46

<211> 41

<212> PRT

<213> Streptococcus agalactiae

<400> 46

Met Val Leu Leu Leu Leu Met Val Ala Lys Ser Ser Leu Met Val  
1 5 10 15

Thr Trp Leu Phe Ile Thr Ile Leu Thr Lys Ile Lys Cys Tyr Gln Ile  
20 25 30

Trp Arg Lys Glu Lys Val Ile Lys Leu  
35 40

<210> 47  
<211> 669  
<212> DNA  
<213> *Streptococcus agalactiae*

<400> 47  
atgaacaaaa aaatttccgg gatcggttgc gttcgattt cagttacttag ttttagctgca 60  
tgtggacatc gtgggtgtttc taaaatctggt ggtaaatcag atagcttgc aa ggttgcata 120  
gtaacagata ccggtggtgt tgatgataaa tcatttaacc aatctggttt ggaaggatcg 180  
caagcttggg gcaagaagaa tggccttaaa aaaggagctg gttttgacta tttccaatcg 240  
gcaagtgaat ctgattatgc aactaactta gatacagctg tgtctagtgg ttataaattt 300  
attttcggta ttggattttc tcttcatgtat gctattgtata aagcagcaga caataacaaa 360  
gatgttaattt acgtcatcgat tgatgtatgtt attaaaggaa aagataatgt tgcaagtgtt 420  
gtctttgcgg ataatgaatc agcttactta gcaggtattt cagccgctaa aactacaaaa 480  
acaaaaaacag ttggctttgtt aggtggatgtt gaaatctgagg ttattacccg ttttgaaaaa 540  
ggttttgaag caggtgtcaa atcaggatgtt aaatcaat taaatcaaagt tgactatgtt 600  
ggttcattcg gtgtatgtgc taagggttaag acaattgcag ccgcacaata tgcttctggc 660  
qcaqatatt 669

<210> 48  
<211> 223  
<212> PRT  
<213> *Streptococcus agalactiae*

<400> 48  
Met Asn Lys Lys Ile Ser Gly Ile Gly Leu Ala Ser Ile Ala Val Leu  
1 5 10 15

Ser Leu Ala Ala Cys Gly His Arg Gly Ala Ser Lys Ser Gly Gly Lys  
20 25 30

Ser Asp Ser Leu Lys Val Ala Met Val Thr Asp Thr Gly Gly Val Asp  
35 40 45

Asp Lys Ser Phe Asn Gln Ser Gly Trp Glu Gly Met Gln Ala Trp Gly  
 50 55 60

Lys Lys Asn Gly Leu Lys Lys Gly Ala Gly Phe Asp Tyr Phe Gln Ser  
 65 70 75 80

Ala Ser Glu Ser Asp Tyr Ala Thr Asn Leu Asp Thr Ala Val Ser Ser  
 85 90 95

Gly Tyr Lys Leu Ile Phe Gly Ile Gly Phe Ser Leu His Asp Ala Ile  
 100 105 110

Asp Lys Ala Ala Asp Asn Asn Lys Asp Val Asn Tyr Val Ile Val Asp  
 115 120 125

Asp Val Ile Lys Gly Lys Asp Asn Val Ala Ser Val Val Phe Ala Asp  
 130 135 140

Asn Glu Ser Ala Tyr Leu Ala Gly Ile Ala Ala Lys Thr Thr Lys  
 145 150 155 160

Thr Lys Thr Val Gly Phe Val Gly Gly Met Glu Ser Glu Val Ile Thr  
 165 170 175

Arg Phe Glu Lys Gly Phe Glu Ala Gly Val Lys Ser Val Asp Lys Ser  
 180 185 190

Ile Lys Ile Lys Val Asp Tyr Ala Gly Ser Phe Gly Asp Ala Ala Lys  
 195 200 205

Gly Lys Thr Ile Ala Ala Ala Gln Tyr Ala Ser Gly Ala Asp Ile  
 210 215 220

<210> 49

<211> 609

<212> DNA

<213> Streptococcus agalactiae

<400> 49

atgttacatt ctaaaaaaat acattcctta tcgcttattg ccgttctctc ttttagcaaca 60

tatacgagtt tacaacccaaa tcatgttagcg gctgaacaat cacaaaaaac atcaactgtt 120  
 cttatgagtc aaaaaactat tgaacataag ttaaaaagttg cagataaaga agctgctcct 180  
 ctctacgcta aaatcgacca tatccaacga catattgaag tcaaaaaagc aaaagattta 240  
 aaagttattg aattgtatat taacaaagat atcaaccaac tagagaagca aaataaacgt 300  
 ctactaacta aatttatac ttctattgtat aatcaaacat gggatagcac aagtgaagtc 360  
 aaaaaattga ttgataagac aaccctatcc actaacgaaa aagatagatt aaaatttat 420  
 tttgaacaac gtgcttacct tgagacaagg ttgaacgacc gctatcaaaa atttgataac 480  
 tctattgaaa accaaaataa agaactaaaa atattaacgt caaaaataga aaaaatctat 540  
 caaaaacatg gtattacaaa agaggtattha aaaacttact atgctaaaaa aacagtacga 600  
 gctgactga 609

<210> 50

<211> 202

<212> PRT

<213> Streptococcus agalactiae

<400> 50

Met Leu His Ser Lys Lys Ile His Ser Leu Ser Leu Ile Ala Val Leu  
 1 5 10 15

Ser Leu Ala Thr Tyr Thr Ser Leu Gln Pro Asn His Val Ala Ala Glu  
 20 25 30

Gln Ser Gln Lys Thr Ser Thr Val Leu Met Ser Gln Lys Thr Ile Glu  
 35 40 45

His Lys Leu Lys Val Ala Asp Lys Glu Ala Ala Pro Leu Tyr Ala Lys  
 50 55 60

Ile Asp His Ile Gln Arg His Ile Glu Val Lys Lys Ala Lys Asp Leu  
 65 70 75 80

Lys Val Ile Glu Leu Tyr Ile Asn Lys Asp Ile Asn Gln Leu Glu Lys  
 85 90 95

Gln Asn Lys Arg Leu Leu Thr Lys Phe Tyr Thr Ser Ile Asp Asn Gln  
 100 105 110

Thr Trp Asp Ser Thr Ser Glu Val Lys Lys Leu Ile Asp Lys Thr Thr  
 115 120 125

Leu Ser Thr Asn Glu Lys Asp Arg Leu Lys Leu Tyr Phe Glu Gln Arg  
130 135 140

Ala Tyr Leu Glu Thr Arg Leu Asn Asp Arg Tyr Gln Lys Phe Asp Asn  
 145 150 155 160

Ser Ile Glu Asn Gln Asn Lys Glu Leu Lys Ile Leu Thr Ser Lys Ile  
165 170 175

Glu Lys Ile Tyr Gln Lys His Gly Ile Thr Lys Glu Val Leu Lys Thr  
180 185 190

Tyr Tyr Ala Lys Lys Thr Val Arg Ala Asp  
195 200

<210> 51  
<211> 600  
<212> DNA  
<213> *Streptococcus agalactiae*

<400> 51  
ctgaattccc aaaaacgcta caatcaaact tggtatccta cttatggttt ttctgatact 60  
tatgcattca tggttactaa agagttgcc agacagaata aaatcaccaa gatctctgtat 120  
ctcaaaaagt tatcaacaac tatgaaggca ggggttgata gttcatggat gaatcgcgag 180  
ggagatggat acactgattt cgctaaaaca tacggtttg aatttcaca tatttaccct 240  
atgcaaattt gcttagtcta tgatgcgggtt gaaagtaaca aaatgcaatc tgtatttaggc 300  
tactccactg acggtcgtat ttccgagctat gatttagaaa ttttaaggga tgataaaaaaa 360  
ttctttccctc cttatgaagc ctctatgggtt gtcaacaatt ctatcatcaa aaaagatcct 420  
aaactaaaaaa aattactcca tcgactcgat ggtaaaatca attaaaaaac gatgcaaaac 480  
cttaattata tggtagatga taaaacttttta gaagcttggc gtaatcatgg tcatacgctgt 540  
ttccctgtgtg aaattgttat ccgctcacaa ttcccacacaa catacgagcc ggaagcataa 600

<210> 52

<211> 199

<212> PRT

<213> Streptococcus agalactiae

<400> 52

Leu Asn Ser Gln Lys Arg Tyr Asn Gln Thr Trp Tyr Pro Thr Tyr Gly  
1 5 10 15

Phe Ser Asp Thr Tyr Ala Phe Met Val Thr Lys Glu Phe Ala Arg Gln  
20 25 30

Asn Lys Ile Thr Lys Ile Ser Asp Leu Lys Lys Leu Ser Thr Thr Met  
35 40 45

Lys Ala Gly Val Asp Ser Ser Trp Met Asn Arg Glu Gly Asp Gly Tyr  
50 55 60

Thr Asp Phe Ala Lys Thr Tyr Gly Phe Glu Phe Ser His Ile Tyr Pro  
65 70 75 80

Met Gln Ile Gly Leu Val Tyr Asp Ala Val Glu Ser Asn Lys Met Gln  
85 90 95

Ser Val Leu Gly Tyr Ser Thr Asp Gly Arg Ile Ser Ser Tyr Asp Leu  
100 105 110

Glu Ile Leu Arg Asp Asp Lys Lys Phe Phe Pro Pro Tyr Glu Ala Ser  
115 120 125

Met Val Val Asn Asn Ser Ile Ile Lys Lys Asp Pro Lys Leu Lys Lys  
130 135 140

Leu Leu His Arg Leu Asp Gly Lys Ile Asn Leu Lys Thr Met Gln Asn  
145 150 155 160

Leu Asn Tyr Met Val Asp Asp Lys Leu Leu Glu Ala Trp Arg Asn His  
165 170 175

Gly His Ser Cys Phe Leu Cys Glu Ile Val Ile Arg Ser Gln Phe His  
 180 185 190

Thr Thr Tyr Glu Pro Glu Ala  
 195

<210> 53  
 <211> 849  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 53  
 atgaaaaaat tactttccct aacatgtcta atcatgatgt ctttatgttt agtggcatgt 60  
 actaagcaag caatgtcgta taagcaagca atgtcgta agcaaattaa agataagaat 120  
 agtaaagaaa aggtgattac ttttgcact tacagcaaac ctacatctac ctttttagat 180  
 ttgattaaag ataatgtaaa agaaaaagga tatactttaa aggttgtcat ggtctctgac 240  
 tatattcagg ctaacattgc ttttagaaaac aaagaacatg atgctaacct tttacaacat 300  
 gaattttca tgagtatctt taataaggaa aatgatggc atctagtgtc aattacacca 360  
 atttatcatt cattggctgg tttttatggt caacatttga aaaatattgc cgagcttaaa 420  
 gacggtgcta aggtagcgat tccgtctgat cctgccaata tgactagagc tctgcttata 480  
 ttgcaagaaa agaaaacttat caccttaaag aatacgtcca aaaagaccaa ggctatcgaa 540  
 gatattattta ctaaccctaa aaaattacga attgaacctg tagcattact taacctcaat 600  
 caggcctatt ttgaatatga ccttgcctt aattttccctg gatatgtgac aaaaatcaat 660  
 ctagttccta aaagggatag attatttat gagaaaaaac cagatatccg ttttgcaggt 720  
 gccttggtag ctcgtgaaga taataaaaaat agtgataaaa taaaagtact taaaagaagta 780  
 ctaacaagta aagagattcg tcactatatac actaaggaga ttccaagtga agcagacgtt 840  
 gcgttctag 849

<210> 54  
 <211> 282  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 54  
 Met Lys Lys Leu Leu Ser Leu Thr Cys Leu Ile Met Met Ser Leu Cys  
 1 5 10 15

Leu Val Ala Cys Thr Lys Gln Ala Met Ser Ser Lys Gln Ala Met Ser  
20 25 30

Ser Lys Gln Ile Lys Asp Lys Asn Ser Lys Glu Lys Val Ile Thr Val  
35 40 45

Ala Thr Tyr Ser Lys Pro Thr Ser Thr Phe Leu Asp Leu Ile Lys Asp  
50 55 60

Asn Val Lys Glu Lys Gly Tyr Thr Leu Lys Val Val Met Val Ser Asp  
65 70 75 80

Tyr Ile Gln Ala Asn Ile Ala Leu Glu Asn Lys Glu His Asp Ala Asn  
85 90 95

Leu Leu Gln His Glu Phe Phe Met Ser Ile Phe Asn Lys Glu Asn Asp  
100 105 110

Gly His Leu Val Ser Ile Thr Pro Ile Tyr His Ser Leu Ala Gly Phe  
115 120 125

Tyr Gly Gln His Leu Lys Asn Ile Ala Glu Leu Lys Asp Gly Ala Lys  
130 135 140

Val Ala Ile Pro Ser Asp Pro Ala Asn Met Thr Arg Ala Leu Leu Leu  
145 150 155 160

Leu Gln Glu Lys Lys Leu Ile Thr Leu Lys Asn Thr Ser Lys Lys Thr  
165 170 175

Lys Ala Ile Glu Asp Ile Ile Thr Asn Pro Lys Lys Leu Arg Ile Glu  
180 185 190

Pro Val Ala Leu Leu Asn Leu Asn Gln Ala Tyr Phe Glu Tyr Asp Leu  
195 200 205

Val Phe Asn Phe Pro Gly Tyr Val Thr Lys Ile Asn Leu Val Pro Lys  
210 215 220

Arg Asp Arg Leu Leu Tyr Glu Lys Lys Pro Asp Ile Arg Phe Ala Gly  
 225 230 235 240

Ala Leu Val Ala Arg Glu Asp Asn Lys Asn Ser Asp Lys Ile Lys Val  
 245 250 255

Leu Lys Glu Val Leu Thr Ser Lys Glu Ile Arg His Tyr Ile Thr Lys  
 260 265 270

Glu Ile Pro Ser Glu Ala Asp Val Ala Phe  
 275 280

<210> 55

<211> 711

<212> DNA

<213> Streptococcus agalactiae

<400> 55

ctgttggcta aggaaaccac tatgtctgtc ctttggtatac aaaattctgc agaagccaag 60  
 gctttatatt tacaaggtta taatgttgct aaaatgaagt tagatgattg gttacaaaaag 120  
 cccagtgaaa aaccatattc aattatctta gatttagatg aaacagttt agataatagc 180  
 ccatatcaag caaagaatat taaagatggc tctagttca cgccagagag ttgggataaa 240  
 tgggtgcaaa agaaatcagc taaggctgtt gcgggtgcca aagaattttt gaagtatgct 300  
 aatgaaaagg gaataaaaat ttattatgtc tcagatcgta cagatgctca agttgatgct 360  
 actaaagaaa attttagagaa ggaaggataa cctgttcaag ggaaagacca cttgctttc 420  
 cttaaaaaag gaatgaaatc taaagagagt cgccgtcagg cagttcaaaa agataccat 480  
 ttaattatgc tttttggaga taatttgtt gattttgctg atttttctaa atcatctagt 540  
 acagatagag aacaactact aactaaactt caaagttagt ttggtagtaa atttattgtt 600  
 ttcccaaattc ctatgtacgg ttcttggaa agtgcattt atcaaggaaa acatctggat 660  
 gttcaaaaac aattgaaaga acgacaaaaa atgttgcatt cgtatgatta a 711

<210> 56

<211> 236

<212> PRT

<213> Streptococcus agalactiae

&lt;400&gt; 56

Leu Leu Ala Lys Glu Thr Thr Met Ser Val Leu Trp Tyr Gln Asn Ser  
 1 5 10 15

Ala Glu Ala Lys Ala Leu Tyr Leu Gln Gly Tyr Asn Val Ala Lys Met  
 20 25 30

Lys Leu Asp Asp Trp Leu Gln Lys Pro Ser Glu Lys Pro Tyr Ser Ile  
 35 40 45

Ile Leu Asp Leu Asp Glu Thr Val Leu Asp Asn Ser Pro Tyr Gln Ala  
 50 55 60

Lys Asn Ile Lys Asp Gly Ser Ser Phe Thr Pro Glu Ser Trp Asp Lys  
 65 70 75 80

Trp Val Gln Lys Lys Ser Ala Lys Ala Val Ala Gly Ala Lys Glu Phe  
 85 90 95

Leu Lys Tyr Ala Asn Glu Lys Gly Ile Lys Ile Tyr Tyr Val Ser Asp  
 100 105 110

Arg Thr Asp Ala Gln Val Asp Ala Thr Lys Glu Asn Leu Glu Lys Glu  
 115 120 125

Gly Ile Pro Val Gln Gly Lys Asp His Leu Leu Phe Leu Lys Lys Gly  
 130 135 140

Met Lys Ser Lys Glu Ser Arg Arg Gln Ala Val Gln Lys Asp Thr Asn  
 145 150 155 160

Leu Ile Met Leu Phe Gly Asp Asn Leu Val Asp Phe Ala Asp Phe Ser  
 165 170 175

Lys Ser Ser Ser Thr Asp Arg Glu Gln Leu Leu Thr Lys Leu Gln Ser  
 180 185 190

Glu Phe Gly Ser Lys Phe Ile Val Phe Pro Asn Pro Met Tyr Gly Ser  
 195 200 205

Trp Glu Ser Ala Ile Tyr Gln Gly Lys His Leu Asp Val Gln Lys Gln  
 210 215 220

Leu Lys Glu Arg Gln Lys Met Leu His Ser Tyr Asp

225

230

235

<210> 57

<211> 128

<212> DNA

<213> Streptococcus agalactiae

<400> 57

atggataata aaggtataaa cgccaatgtg attgatgcaa tcgctgaggg tgcaagcaca 60

ggtgacacaaa tggcttctc aattggtgct agtttattg cctttgttgg ttttagttct 120

ttgattaa 128

<210> 58

<211> 42

<212> PRT

<213> Streptococcus agalactiae

<400> 58

Met Asp Asn Lys Gly Asn Asn Ala Asn Val Ile Asp Ala Ile Ala Glu

1

5

10

15

Gly Ala Ser Thr Gly Ala Gln Met Ala Phe Ser Ile Gly Ala Ser Leu  
 20 25 30

Ile Ala Phe Val Gly Leu Val Ser Leu Ile  
 35 40

<210> 59  
 <211> 573  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 59  
 atgaaaaaga aaaacaaatc ctctaacatt gctataattg caatctttt tgctattatg 60  
 cttgtcattc atttttgtc atcatttatt tttagtttt ggttagtccc tattaaacct 120  
 actttgc atatcccagt tattattgca tctatagcct atggacctcg tattggtgca 180  
 acitctaggcg ccttaatggg ggggatcagc gtagctaaca gcagcattgt tctattacca 240  
 acgagttacc tcttctcacc ttttgttcaa aatgtaatt tttattcgct aattattgca 300  
 cttgtaccac gtattctaatt cgggattatt ccttatttcg tttacaaatt actacacaac 360  
 cgctttgggtt tggctatctc aggtgctata ggctctctaa caaacacagt atttgtttta 420  
 tctggaattt ttatctttt ttcaagtact tataatggga atatcaagct aatgctcgct 480  
 gggattattt catctaattc attagctgag atggtcattg cagctatcat tgtatatatcta 540  
 actgatcctc gtattctcaa tattaaacat taa 573

<210> 60  
 <211> 190  
 <212> PRT  
 <213> Streptococcus agalactiae

<400> 60  
 Met Lys Lys Lys Asn Lys Ser Ser Asn Ile Ala Ile Ile Ala Ile Phe  
 1 5 10 15  
 Phe Ala Ile Met Leu Val Ile His Phe Leu Ser Ser Phe Ile Phe Ser  
 20 25 30

Phe Trp Leu Val Pro Ile Lys Pro Thr Leu Met His Ile Pro Val Ile  
 35 40 45

Ile Ala Ser Ile Ala Tyr Gly Pro Arg Ile Gly Ala Thr Leu Gly Ala  
 50 55 60

Leu Met Gly Gly Ile Ser Val Ala Asn Ser Ser Ile Val Leu Leu Pro  
 65 70 75 80

Thr Ser Tyr Leu Phe Ser Pro Phe Val Glu Asn Gly Asn Phe Tyr Ser  
 85 90 95

Leu Ile Ile Ala Leu Val Pro Arg Ile Leu Ile Gly Ile Ile Pro Tyr  
 100 105 110

Phe Val Tyr Lys Leu Leu His Asn Arg Phe Gly Leu Ala Ile Ser Gly  
 115 120 125

Ala Ile Gly Ser Leu Thr Asn Thr Val Phe Val Leu Ser Gly Ile Phe  
 130 135 140

Ile Phe Phe Ser Ser Thr Tyr Asn Gly Asn Ile Lys Leu Met Leu Ala  
 145 150 155 160

Gly Ile Ile Ser Ser Asn Ser Leu Ala Glu Met Val Ile Ala Ala Ile  
 165 170 175

Ile Val Tyr Leu Thr Asp Pro Arg Ile Leu Asn Ile Lys His  
 180 185 190

<210> 61

<211> 251

<212> DNA

<213> Streptococcus agalactiae

<400> 61

ttgaatatga cattacaaga cgaaatcaaa aaacgcccgtatccatcttcac 60

ccggatgctg gtaagacgac tattactgag caattattat attttggtag tgaaattaga 120  
 gaagcaggga cagtaaaagg gaaaaaatca ggtactttg caaagtccga ctggatggat 180  
 atgaaaagc aacgggtat ctctgttact tcatctgtta tgcaatttga ttacgcgggt 240  
 aaacgtgtta a 251

<210> 62  
 <211> 83  
 <212> PRT  
 <213> *Streptococcus agalactiae*

<400> 62  
 Met Asn Met Thr Leu Gln Asp Glu Ile Lys Lys Arg Arg Thr Phe Ala  
 1 5 10 15  
 Ile Ile Ser His Pro Asp Ala Gly Lys Thr Thr Ile Thr Glu Gln Leu  
 20 25 30  
 Leu Tyr Phe Gly Gly Glu Ile Arg Glu Ala Gly Thr Val Lys Gly Lys  
 35 40 45  
 Lys Ser Gly Thr Phe Ala Lys Ser Asp Trp Met Asp Ile Glu Lys Gln  
 50 55 60  
 Arg Gly Ile Ser Val Thr Ser Ser Val Met Gln Phe Asp Tyr Ala Gly  
 65 70 75 80  
 Lys Arg Val

<210> 63  
 <211> 303  
 <212> DNA  
 <213> *Streptococcus agalactiae*

<400> 63  
 atggcagata aaaacagaac atttaaactt gtaggtgcag gatcttctag cacacaagaa 60  
 aaaattgaaa agcctgctct ttcgtttatg caagatgcgt ggcgtcgctt gaaaaaaaaac 120

aaatttagcag tagtttcaact ctatttatta gctctttac ttacttttc gttagcctca 180  
 aatttatttg taactcagaa ggatgctaattt gggtttgattt cgaaaaaaagt aacgacatata 240  
 cgcaacttac cacctaaattt gagttcaaaac cttccctttt ggaatggtag cattaatccca 300  
 tca 303

<210> 64

<211> 101

<212> PRT

<213> Streptococcus agalactiae

<400> 64

Met Ala Asp Lys Asn Arg Thr Phe Lys Leu Val Gly Ala Gly Ser Ser  
 1 5 10 15

Ser Thr Gln Glu Lys Ile Glu Lys Pro Ala Leu Ser Phe Met Gln Asp  
 20 25 30

Ala Trp Arg Arg Leu Lys Lys Asn Lys Leu Ala Val Val Ser Leu Tyr  
 35 40 45

Leu Leu Ala Leu Leu Leu Thr Phe Ser Leu Ala Ser Asn Leu Phe Val  
 50 55 60

Thr Gln Lys Asp Ala Asn Gly Phe Asp Ser Lys Lys Val Thr Thr Tyr  
 65 70 75 80

Arg Asn Leu Pro Pro Lys Leu Ser Ser Asn Leu Pro Phe Trp Asn Gly  
 85 90 95

Ser Ile Asn Pro Ser

100

<210> 65

<211> 154

<212> DNA

<213> Streptococcus agalactiae

<400> 65

atgaaaagaa aacagtttat aaaatttagga attgcaacct tactaacggt tatttcgctt 60

tacacaccaa taaaccttagc tacaaatcat accacagaaa atattgttac tgctcaagag 120

tataaaacaa agagaatggt actttacctt ttaa 154

<210> 66

<211> 51

<212> PRT

<213> Streptococcus agalactiae

<400> 66

Met Lys Arg Lys Gln Phe Ile Lys Leu Gly Ile Ala Thr Leu Leu Thr

1 5 10 15

Val Ile Ser Leu Tyr Thr Pro Ile Asn Leu Ala Thr Asn His Thr Thr

20 25 30

Glu Asn Ile Val Thr Ala Gln Glu Tyr Lys Thr Lys Glu Asn Ile Leu

35 40 45

Phe Leu Leu

50

<210> 67

<211> 144

<212> DNA

<213> Streptococcus agalactiae

<400> 67

atgtttata atccttact ttttattgta ctaattacaa ttgctgtatt tttcttagct 60

aagaaaaaat ggcaattacc gacatttact ttcattggtt tgctatttat ctataaccaa 120  
 gggctgtggg aacagttgat taat 144

<210> 68

<211> 48

<212> PRT

<213> Streptococcus agalactiae

<400> 68

Met Phe Tyr Asn Pro Leu Leu Phe Ile Val Leu Ile Thr Ile Ala Val  
 1 5 10 15

Phe Phe Leu Ala Lys Lys Trp Gln Leu Pro Thr Phe Thr Phe Ile  
 20 25 30

Gly Leu Leu Phe Ile Tyr Asn Gln Gly Leu Trp Glu Gln Leu Ile Asn  
 35 40 45

<210> 69

<211> 453

<212> DNA

<213> Streptococcus agalactiae

<400> 69

gtggtgcaaa taatgaaaaa acatataaaa agtacatac caatagttct tattggtag 60  
 atactaggag gctgtcaa at gaatagt gaa cataaaagtc agtataatga aacaaaaagt 120  
 agcaagcaat cagaagt gaa gaaagataaa aaaatgacaa aaaaagaaca attagctt 180  
 ctcaaagagc atgaacaaga aataattgat tttgtaaaat ctcagaataa aaagatagaa 240  
 tctgtacaaa ttgattggaa tcatgttcga tggagtaa ag gggaaatgg tacacctcaa 300  
 ggaggaggag aggggatttt actttttggg gagattaata atgattctga atcaagttgg 360  
 agagttgata ttgatata gaa aggacgg ctagaccaa aaaatatgta tttggacaa 420  
 cctatacgaat ttggaggtaa attatggat taa 453

<210> 70

<211> 150

<212> PRT

<213> Streptococcus agalactiae

<400> 70

Met Val Gln Ile Met Lys Lys His Ile Lys Ser Ile Ile Pro Ile Val

1

5

10

15

Leu Ile Gly Met Ile Leu Gly Gly Cys Gln Met Asn Ser Glu His Lys

20

25

30

Ser Gln Tyr Asn Glu Thr Lys Ser Ser Lys Gln Ser Glu Val Lys Lys

35

40

45

Asp Lys Lys Met Thr Lys Lys Glu Gln Leu Ala Tyr Leu Lys Glu His

50

55

60

Glu Gln Glu Ile Ile Asp Phe Val Lys Ser Gln Asn Lys Lys Ile Glu

65

70

75

80

Ser Val Gln Ile Asp Trp Asn Asp Val Arg Trp Ser Lys Gly Gly Asn

85

90

95

Gly Thr Pro Gln Gly Gly Glu Gly Ile Leu Leu Phe Gly Glu Ile

100

105

110

Asn Asn Asp Ser Glu Ser Ser Trp Arg Val Asp Ile Asp Ile Glu Lys

115

120

125

Gly Arg Leu Asp Leu Lys Asn Met Tyr Leu Gly Gln Pro Ile Arg Ile

130

135

140

Gly Gly Lys Leu Phe Glu

145

150

<210> 71

<211> 1455

<212> DNA

<213> *Streptococcus agalactiae*

<400> 71

atggaatttt tggcttataa tgcttcaca gcaatcggtg tttctattcc gcacggtaat 60  
catttccact ttattcacta taaggataatg tctcatttag agttagaagc aacaaggatg 120  
gtggcagagc atagaggaca tcatttgcattatgat gcattaggaa aaaaagattc tacagagaaaa 180  
ccaaagcata tttctcatga acctaataag gaacctcaca cagaggaaga acaccatgca 240  
gtaacaccga aagaccaacg taaaggcaaa ccaaataagcc agattgtctc cagtgcctaa 300  
gaaattgaag aggcaaaaaa agctggtaaa tacacaacat ctgatggta cattttgtat 360  
gctaaagata ttaaaaaaga tacaggtaca ggttatgtca ttccacatata gacacatgag 420  
cattgggtac caaagaaaga tttatcagag tcggattaa aagcagctca agaatttctt 480  
tcaggaaaaat ctgaagcaaa tcaagacaaaa ccaaaaacag gtaaaacagc tcaagaaatc 540  
tatgaggcaa ttgaaccaaa agcaattgtt aaacctgaag atttattatt tggaattgca 600  
caagcgcacag actataagaa tggtacattt gtaattcctc ataaagatca ttaccattat 660  
gtggattaa aatggtttga tgaagaaaaa gatcttttag ctgattcaga taagacatata 720  
tctttagaag actattttagc tacggctaaa tattacatga tgcacccaga aaaacgtcct 780  
aaagttgaag gatggggtaa agatgctgaa atttataagg aaaaggactc taataaagca 840  
gataaaaccaa gtcctgcacc aactgataat aaatcaacat caaattctag tgacaaaaac 900  
ttaagtgcgt cagaagtatt caaacaagca aaaccagaaaa aaattgtacc gcttgataaa 960  
attgcgtc acatggcata tgcagttgga tttgaagatg atcaattgtat tgttcctcat 1020  
catgatcatt atcataatgt tcctatggca tggtttgaca agggtggtt atggaaagca 1080  
ccagaaggct atacattaca acaactcttc tcaacaatta aatactacat ggaacatcct 1140  
aatgaattac caaaagaaaa gggttgggaa cacgacagtg atcataacaa aggctcaaat 1200  
aaagacaata aagccaaaaa ttatgctcca gatgaagaac ctgaagattc agggaaagta 1260  
actcacaact atggttttta ttagtgcattaa aaggtttag acgaagaaga accagaaaaa 1320  
caagaagatg aatcagagct agatgaatat gaactaggaa tggcacaaaa cgctaaagaaa 1380  
tatggatgg atagacaatc ttttggaaag caactcatcc aattatcaaa taaatataatgt 1440  
gtaagtttg aaagc 1455

<210> 72

<211> 485

<212> PRT

<213> *Streptococcus agalactiae*

&lt;400&gt; 72

Met Glu Phe Leu Ala Tyr Asn Ala Phe Thr Ala Ile Gly Val Ser Ile  
1 5 10 15

Pro His Gly Asn His Phe His Ile His Tyr Lys Asp Met Ser Pro  
20 25 30

Leu Glu Leu Glu Ala Thr Arg Met Val Ala Glu His Arg Gly His His  
35 40 45

Ile Asp Ala Leu Gly Lys Lys Asp Ser Thr Glu Lys Pro Lys His Ile  
50 55 60

Ser His Glu Pro Asn Lys Glu Pro His Thr Glu Glu Glu His His Ala  
65 70 75 80

Val Thr Pro Lys Asp Gln Arg Lys Gly Lys Pro Asn Ser Gln Ile Val  
85 90 95

Tyr Ser Ala Gln Glu Ile Glu Ala Lys Lys Ala Gly Lys Tyr Thr  
100 105 110

Thr Ser Asp Gly Tyr Ile Phe Asp Ala Lys Asp Ile Lys Lys Asp Thr  
115 120 125

Gly Thr Gly Tyr Val Ile Pro His Met Thr His Glu His Trp Val Pro  
130 135 140

Lys Lys Asp Leu Ser Glu Ser Glu Leu Lys Ala Ala Gln Glu Phe Leu  
145 150 155 160

Ser Gly Lys Ser Glu Ala Asn Gln Asp Lys Pro Lys Thr Gly Lys Thr  
165 170 175

Ala Gln Glu Ile Tyr Glu Ala Ile Glu Pro Lys Ala Ile Val Lys Pro  
180 185 190

Glu Asp Leu Leu Phe Gly Ile Ala Gln Ala Thr Asp Tyr Lys Asn Gly  
195 200 205

Thr Phe Val Ile Pro His Lys Asp His Tyr His Tyr Val Glu Leu Lys  
210 215 220

Trp Phe Asp Glu Glu Lys Asp Leu Leu Ala Asp Ser Asp Lys Thr Tyr  
225 230 235 240

Ser Leu Glu Asp Tyr Leu Ala Thr Ala Lys Tyr Tyr Met Met His Pro  
245 250 255

Glu Lys Arg Pro Lys Val Glu Gly Trp Gly Lys Asp Ala Glu Ile Tyr  
260 265 270

Lys Glu Lys Asp Ser Asn Lys Ala Asp Lys Pro Ser Pro Ala Pro Thr  
275 280 285

Asp Asn Lys Ser Thr Ser Asn Ser Ser Asp Lys Asn Leu Ser Ala Ala  
290 295 300

Glu Val Phe Lys Gln Ala Lys Pro Glu Lys Ile Val Pro Leu Asp Lys  
305 310 315 320

Ile Ala Ala His Met Ala Tyr Ala Val Gly Phe Glu Asp Asp Gln Leu  
325 330 335

Ile Val Pro His His Asp His Tyr His Asn Val Pro Met Ala Trp Phe  
340 345 350

Asp Lys Gly Gly Leu Trp Lys Ala Pro Glu Gly Tyr Thr Leu Gln Gln  
355 360 365

Leu Phe Ser Thr Ile Lys Tyr Tyr Met Glu His Pro Asn Glu Leu Pro  
370 375 380

Lys Glu Lys Gly Trp Gly His Asp Ser Asp His Asn Lys Gly Ser Asn  
385 390 395 400

Lys Asp Asn Lys Ala Lys Asn Tyr Ala Pro Asp Glu Glu Pro Glu Asp  
 405 410 415

Ser Gly Lys Val Thr His Asn Tyr Gly Phe Tyr Asp Val Asn Lys Gly  
 420 425 430

Ser Asp Glu Glu Glu Pro Glu Lys Gln Glu Asp Glu Ser Glu Leu Asp  
 435 440 445

Glu Tyr Glu Leu Gly Met Ala Gln Asn Ala Lys Lys Tyr Gly Met Asp  
 450 455 460

Arg Gln Ser Phe Glu Lys Gln Leu Ile Gln Leu Ser Asn Lys Tyr Ser  
 465 470 475 480

Val Ser Phe Glu Ser  
 485

<210> 73  
 <211> 855  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 73  
 atgagggaaac gtttttcctt gctaaatttt attgttgtt aattttatttt ctttttcattt 60  
 attcttttcc cgcttttaa ggccaaagat tgcagggtt tttatgcaag ttttcaagga 120  
 gatcattggg acatttgtaa cgcatttgcatttccgtatt tacatcgctt tgatctcattt 180  
 aaaggtaaag aaaatcaact ttactttata ggttgcacaa ttgctaacag taaagcctac 240  
 actgaggatt ggagtgataa aggccgaatt tttgttgctc gtttaatac tcaaaaccat 300  
 acatttggaaag gattgcaaca attgcctcaa actttattaa aaaatcatgg atactatgcc 360  
 attcaggatg aaggatattc attgattact tcagtagaaag gggtaactcaa actcacttat 420  
 ccagaattttt ctactacagg cgactggcaa ttggaaacggc ttttcgtatga ggagacaagc 480  
 gatgtggatg aagtggatat taatcaggat ggtaaggatg agtatgtat catccaagg 540  
 ttcatggat atcggttacg tatcttcaactt gaagatttcg gtcgagaattt attccattat 600  
 cctgaaaaaa ccccatgg tcacgctatt tggagtggtc gtttacttaa tcagacttgt 660  
 ttcgtattcg ggtggcgatc agaaaaagca gaattaaggc ttttcactt tggatggg 720

cacttggttt cagaattagt agatgcaaaa gcagcttcta gtaatgtctt agctttgaa 780  
 aaagatggaa aagcttatct tttctcagcc aataacggac gtggcgaagt tgctctttat 840  
 caattagtaa aataa 855

<210> 74

<211> 284

<212> PRT

<213> Streptococcus agalactiae

<400> 74

Met Arg Lys Arg Phe Ser Leu Leu Asn Phe Ile Val Val Thr Phe Ile  
 1 5 10 15

Phe Phe Phe Phe Ile Leu Phe Pro Leu Phe Lys Ala Lys Asp Cys Gln  
 20 25 30

Val Val Tyr Ala Ser Phe Gln Gly Asp His Trp Asp Ile Cys Asn Ala  
 35 40 45

Phe Asp Phe Pro Tyr Leu His Arg Phe Asp Leu Ile Lys Gly Lys Glu  
 50 55 60

Asn Gln Leu Tyr Phe Ile Gly Cys Thr Ile Ala Asn Ser Lys Ala Tyr  
 65 70 75 80

Thr Glu Asp Trp Ser Asp Lys Gly Arg Ile Phe Val Ala Arg Phe Asn  
 85 90 95

Thr Gln Asn His Thr Leu Glu Gly Leu Gln Gln Leu Pro Gln Thr Leu  
 100 105 110

Leu Lys Asn His Gly Tyr Tyr Ala Ile Gln Asp Glu Gly Tyr Ser Leu  
 115 120 125

Ile Thr Ser Val Glu Gly Val Leu Lys Leu Thr Tyr Pro Glu Phe Ser  
 130 135 140

Thr Thr Gly Asp Trp Gln Leu Glu Arg Leu Phe Asp Glu Glu Thr Ser  
 145 150 155 160

Asp Val Val Lys Val Asp Ile Asn Gln Asp Gly Lys Asp Glu Tyr Val  
 165 170 175

Ile Ile Gln Gly Phe His Gly Asp Arg Leu Arg Ile Phe Thr Glu Asp  
 180 185 190

Phe Gly Arg Glu Leu Phe His Tyr Pro Glu Lys Thr Pro Phe Gly His  
 195 200 205

Ala Ile Trp Ser Gly Arg Leu Leu Asn Gln Thr Cys Phe Val Phe Gly  
 210 215 220

Trp Arg Ser Glu Lys Ala Glu Leu Arg Leu Phe His Phe Val Asp Gly  
 225 230 235 240

His Leu Val Ser Glu Leu Val Asp Ala Lys Ala Ala Ser Ser Asn Val  
 245 250 255

Leu Ala Phe Glu Lys Asp Gly Lys Ala Tyr Leu Phe Ser Ala Asn Asn  
 260 265 270

Gly Arg Gly Glu Val Ala Leu Tyr Gln Leu Val Lys  
 275 280

<210> 75

<211> 2070

<212> DNA

<213> Streptococcus agalactiae

<400> 75

atgaaggcaca agttaaaaagc ttttacgctt gctttactct caatattctt tgggtttgggt 60  
 ggaaagggtca gtgcagagac tgtgaatatt gtttctgata cagcatacgc tccattcgaa 120  
 tttaaagatt ctgatcaaac ttataaagga atcgatgttg acatcgtaa cgaagtcgct 180

aagcgtgctg gctggaatgt taacatgacg tatccagggtt ttgatgccgc agttaacgct 240  
 gttcaatctg gacaggcaga tgcgctaattg gccgaaacta ctgttactga agcacgtaaa 300  
 aaagtcttta atttctcaga tacttattac gatacttccg ttattcttta tactaaaaat 360  
 aataataaag tcacaaaacta caaacaacta aaaggaaaag tagtcgggtgt aaaaaatgga 420  
 acagctgctc aaagcttctt agaagaaaat aaatctaaat acggctataa agttaaaaca 480  
 tttgatacaa gcgacctaattt gaataacagc cttgattctg gttctatttta cgccgctatg 540  
 gacgatcaac cagttgtgca atttgcgata aatcaaggaa aagcttacgc cattaacatg 600  
 gaaggcgaag cagttggtag ctttgcattt gctgtcaaaa aaggttagtgg acacgataat 660  
 ctaattaaag aatttaacac agcttttgca caaatgaaat cagatggcac ttataatgac 720  
 atcatggata aatggcttgg aaaagacgct acaaaaacaa gcggcaaagc aacaggtaat 780  
 gccaatgaaa aagcaactcc tggtaaagcca agttataaaa ttgtttctga ttcttcattt 840  
 gcaccattcg aatatcaaaa cggtaaaggg aaatatactg gttttgatat ggaattaatc 900  
 acgaaaattt ctaaacagca aggttttaaa cttgatatactt caaatccagg ttttgatgcc 960  
 gctttaaatg ctgtccaatc tgggcaagct gacgggttta ttgcaggagc cacaatcaca 1020  
 gaagcacgccc aaaaaatctt tgattttctt gatccttattt acacatctag cgttatctt 1080  
 gcggttaaaaa aaggaagcaa tgtcaaatac taccaggatt taaaaggaaa aacagttgg 1140  
 gctaaaaatg gtactgcctc atatacttgg ttatcagacc acgcagataa gtacaactat 1200  
 catgttaaag catttgcatttga agcatctaca atgtatgata gtatgaactc aggttcaatt 1260  
 gatgctctaa tggatgacga agccgttctt gcttacgta ttaatcaagg tcgtaaat 1320  
 gaaacaccta tcaaagggtga aaaatcagggc gatatcggtt ttgcagtgaa aaaaggggca 1380  
 aatccagaat taattaaaat gtttaacaac ggtttttttt cactaaaaat atcgggttag 1440  
 tacgataaac ttgtttaaaaa ataccttcc acagccagca cttttttttt cgtataatc 1500  
 gctaaacctg tagatgaatc aactatttttta gggtaattt ctaataacta caaacaattt 1560  
 ctatctggta ttggaaactac tttaagtttta acttttatctt cttttttttt tgctatgg 1620  
 attggatatttttta ttgtatattgt ccgttgcattt ccactcatga ttgtggccgc tttttttttt 1740  
 tggggtattt ctaatttaat cgaaagcatc acaggtcacc aaagtccaaat taatgactt 1800  
 gttgtgtctt ctatcgctt ttctttttt ggtgggtgcgtt acattgttgcgtt aattgttgcgtt 1860  
 ggtgggtattt aagctgttcc ttctggtcaa atggaagcaa gtcgcagttt aggtattttttt 1920  
 tacggcaaaa ctatgcaaaa ggttatctt cctcaagcag tacgcctt gtttaccaaac 1980  
 ttttatcaacc aatttgcattt ctcattaaag gatacaacaa ttgtatcagc aatcggactt 2040  
 gtggaaactctt tccaaacttgg taaatcataa 2070

<210> 76

<211> 689

<212> PRT

<213> *Streptococcus agalactiae*

&lt;400&gt; 76

Met Lys His Lys Leu Lys Ala Phe Thr Leu Ala Leu Leu Ser Ile Phe  
1 5 10 15

Phe Val Phe Gly Gly Lys Val Ser Ala Glu Thr Val Asn Ile Val Ser  
20 25 30

Asp Thr Ala Tyr Ala Pro Phe Glu Phe Lys Asp Ser Asp Gln Thr Tyr  
35 40 45

Lys Gly Ile Asp Val Asp Ile Val Asn Glu Val Ala Lys Arg Ala Gly  
50 55 60

Trp Asn Val Asn Met Thr Tyr Pro Gly Phe Asp Ala Ala Val Asn Ala  
65 70 75 80

Val Gln Ser Gly Gln Ala Asp Ala Leu Met Ala Gly Thr Thr Val Thr  
85 90 95

Glu Ala Arg Lys Lys Val Phe Asn Phe Ser Asp Thr Tyr Tyr Asp Thr  
100 105 110

Ser Val Ile Leu Tyr Thr Lys Asn Asn Asn Lys Val Thr Asn Tyr Lys  
115 120 125

Gln Leu Lys Gly Lys Val Val Gly Val Lys Asn Gly Thr Ala Ala Gln  
130 135 140

Ser Phe Leu Glu Glu Asn Lys Ser Tyr Gly Tyr Lys Val Lys Thr  
145 150 155 160

Phe Asp Thr Ser Asp Leu Met Asn Asn Ser Leu Asp Ser Gly Ser Ile  
165 170 175

Tyr Ala Ala Met Asp Asp Gln Pro Val Val Gln Phe Ala Ile Asn Gln  
180 185 190

Gly Lys Ala Tyr Ala Ile Asn Met Glu Gly Glu Ala Val Gly Ser Phe  
195 200 205

Ala Phe Ala Val Lys Lys Gly Ser Gly His Asp Asn Leu Ile Lys Glu  
210 215 220

Phe Asn Thr Ala Phe Ala Gln Met Lys Ser Asp Gly Thr Tyr Asn Asp  
225 230 235 240

Ile Met Asp Lys Trp Leu Gly Lys Asp Ala Thr Lys Thr Ser Gly Lys  
245 250 255

Ala Thr Gly Asn Ala Asn Glu Lys Ala Thr Pro Val Lys Pro Ser Tyr  
260 265 270

Lys Ile Val Ser Asp Ser Ser Phe Ala Pro Phe Glu Tyr Gln Asn Gly  
275 280 285

Lys Gly Lys Tyr Thr Gly Phe Asp Met Glu Leu Ile Thr Lys Ile Ala  
290 295 300

Lys Gln Gln Gly Phe Lys Leu Asp Ile Ser Asn Pro Gly Phe Asp Ala  
305 310 315 320

Ala Leu Asn Ala Val Gln Ser Gly Gln Ala Asp Gly Val Ile Ala Gly  
325 330 335

Ala Thr Ile Thr Glu Ala Arg Gln Lys Ile Phe Asp Phe Ser Asp Pro  
340 345 350

Tyr Tyr Thr Ser Ser Val Ile Leu Ala Val Lys Lys Gly Ser Asn Val  
355 360 365

Lys Ser Tyr Gln Asp Leu Lys Gly Lys Thr Val Gly Ala Lys Asn Gly  
370 375 380

Thr Ala Ser Tyr Thr Trp Leu Ser Asp His Ala Asp Lys Tyr Asn Tyr  
385 390 395 400

His Val Lys Ala Phe Asp Glu Ala Ser Thr Met Tyr Asp Ser Met Asn  
405 410 415

Ser Gly Ser Ile Asp Ala Leu Met Asp Asp Glu Ala Val Leu Ala Tyr  
420 425 430

Ala Ile Asn Gln Gly Arg Lys Phe Glu Thr Pro Ile Lys Gly Glu Lys  
435 440 445

Ser Gly Asp Ile Gly Phe Ala Val Lys Lys Gly Ala Asn Pro Glu Leu  
450 455 460

Ile Lys Met Phe Asn Asn Gly Leu Ala Ser Leu Lys Lys Ser Gly Glu  
465 470 475 480

Tyr Asp Lys Leu Val Lys Lys Tyr Leu Ser Thr Ala Ser Thr Ser Ser  
485 490 495

Asn Asp Lys Ala Ala Lys Pro Val Asp Glu Ser Thr Ile Leu Gly Leu  
500 505 510

Ile Ser Asn Asn Tyr Lys Gln Leu Leu Ser Gly Ile Gly Thr Thr Leu  
515 520 525

Ser Leu Thr Leu Ile Ser Phe Ala Ile Ala Met Val Ile Gly Ile Ile  
530 535 540

Phe Gly Met Met Ser Val Ser Pro Ser Asn Thr Leu Arg Thr Ile Ser  
545 550 555 560

Met Ile Phe Val Asp Ile Val Arg Gly Ile Pro Leu Met Ile Val Ala  
565 570 575

Ala Phe Ile Phe Trp Gly Ile Pro Asn Leu Ile Glu Ser Ile Thr Gly  
580 585 590

His Gln Ser Pro Ile Asn Asp Phe Val Ala Ala Thr Ile Ala Leu Ser  
595 600 605

Leu Asn Gly Gly Ala Tyr Ile Ala Glu Ile Val Arg Gly Gly Ile Glu  
 610 615 620

Ala Val Pro Ser Gly Gln Met Glu Ala Ser Arg Ser Leu Gly Ile Ser  
 625 630 635 640

Tyr Gly Lys Thr Met Gln Lys Val Ile Leu Pro Gln Ala Val Arg Leu  
 645 650 655

Met Leu Pro Asn Phe Ile Asn Gln Phe Val Ile Ser Leu Lys Asp Thr  
 660 665 670

Thr Ile Val Ser Ala Ile Gly Leu Val Glu Leu Phe Gln Thr Gly Lys  
 675 680 685

Ser

<210> 77

<211> 149

<212> DNA

<213> *Streptococcus agalactiae*

<400> 77

ttggaagggt tacttattgc attgattccc atgttgcgt ggggaagtat tggatttgtt 60  
 agtaataaaa ttggaggggcg tccaaatcaa caaacattt gaatgacttt aggagcattt 120  
 ctatttgcga ttatcgtatg tttatttaa 149

<210> 78

<211> 49

<212> PRT

<213> *Streptococcus agalactiae*

<400> 78

Met Glu Gly Leu Leu Ile Ala Leu Ile Pro Met Phe Ala Trp Gly Ser

Ile Gly Phe Val Ser Asn Lys Ile Gly Gly Arg Pro Asn Gln Gln Thr  
20 25 30

Phe Gly Met Thr Leu Gly Ala Leu Leu Phe Ala Ile Ile Val Cys Leu  
35 40 45

Phe

<210> 79

<211> 963

<212> DNA

<213> Streptococcus agalactiae

<400> 79

atgaataacta tttataatac attgagaaca gataaagggtt ataaagttt tgaggggtat 60  
ttatatgaaa ttactggtga agaatgtcaa gaagccttag accttgcgtat tcctaagaat 120  
attgtatttg cagatacaga tacttgcgtac tacttttt tactcaatga agatggaaca 180  
gtttatgtatgtatgtactttt ctacaaattt gatgataaat attgggttgc tagtcaataaa 240  
gctttggatt cttatattaga caacatcaat tttgactata ccgtaacaga tatttctgac 300  
gagtataaaa tgctgcaaat tgaaggaaga tattcgggag aaattgctca gtcattttat 360  
gaatatgata tttcaacact taattttcgta actcttcgca tagagatgga cttcatcaaaa 420  
ggtgaggaaa ggttatcttgcgttagattt ggttttctg gagaatttgg ctatcaattt 480  
ttcctaccat cttctatttt tgctactttt gtttccggatg tctgtgaagg tatagcagag 540  
tgtggggatg aacttgatag atatttaagg tttgaagtgg gacaacccat tactgatatt 600  
tatcaacaag aagaatatttcc ttatataatgaa ataggttattt cttggatct agatttcaca 660  
aaggaagaat ttagaggctcg cgatagcttgc ttagagcaca tcagatcagc aacagttaaa 720  
agtgttggat tctcaacgaa gaaaaactc gcttcaggaa caccagtgtt atttgtgac 780  
caaattgttg gaaagatttt ttggatagca gacgagaaac actcttcggaa aaattaccta 840  
ggtttgcgtatgaa ttgttaacca aacatatgtt cattcaggag ttacttttgc aacagaagat 900  
ggccaaattt tgaaaaacaca atcaaggccct tattgtatcc cagaaagttg gaacaaagaa 960  
tga 963

<210> 80

<211> 320

<212> PRT

<213> Streptococcus agalactiae

<400> 80

Met Asn Thr Ile Tyr Asn Thr Leu Arg Thr Asp Lys Gly Tyr Lys Val  
1 5 10 15

Tyr Glu Gly Tyr Leu Tyr Glu Ile Thr Gly Glu Glu Cys Glu Ala  
20 25 30

Leu Asp Leu Val Ile Pro Lys Asn Ile Val Phe Ala Asp Thr Asp Thr  
35 40 45

Cys Gly Tyr Thr Phe Leu Leu Asn Glu Asp Gly Thr Val Tyr Asp Asp  
50 55 60

Val Thr Phe Tyr Lys Phe Asp Asp Lys Tyr Trp Leu Ala Ser His Lys  
65 70 75 80

Ala Leu Asp Ser Tyr Leu Asp Asn Ile Asn Phe Asp Tyr Thr Val Thr  
85 90 95

Asp Ile Ser Asp Glu Tyr Lys Met Leu Gln Ile Glu Gly Arg Tyr Ser  
100 105 110

Gly Glu Ile Ala Gln Ser Phe Tyr Glu Tyr Asp Ile Ser Thr Leu Asn  
115 120 125

Phe Arg Thr Leu Arg Ile Glu Met Asp Phe Ile Lys Gly Glu Glu Arg  
130 135 140

Leu Ser Trp Arg Arg Phe Gly Phe Ser Gly Glu Phe Gly Tyr Gln Phe  
145 150 155 160

Phe Leu Pro Ser Ser Ile Phe Ala Thr Phe Val Ser Asp Val Cys Glu  
165 170 175

Gly Ile Ala Glu Cys Gly Asp Glu Leu Asp Arg Tyr Leu Arg Phe Glu  
 180 185 190

Val Gly Gln Pro Ile Thr Asp Ile Tyr Gln Gln Glu Glu Tyr Ser Leu  
 195 200 205

Tyr Glu Ile Gly Tyr Ser Trp Asn Leu Asp Phe Thr Lys Glu Glu Phe  
 210 215 220

Arg Gly Arg Asp Ser Leu Leu Glu His Ile Arg Ser Ala Thr Val Lys  
 225 230 235 240

Ser Val Gly Phe Ser Thr Lys Glu Lys Leu Ala Ser Gly Thr Pro Val  
 245 250 255

Leu Phe Asp Asp Gln Ile Val Gly Lys Ile Phe Trp Ile Ala Asp Glu  
 260 265 270

Lys His Ser Ser Glu Asn Tyr Leu Gly Leu Met Ile Val Asn Gln Thr  
 275 280 285

Tyr Ala His Ser Gly Val Thr Phe Val Thr Glu Asp Gly Gln Ile Leu  
 290 295 300

Lys Thr Gln Ser Ser Pro Tyr Cys Ile Pro Glu Ser Trp Asn Lys Glu  
 305 310 315 320

<210> 81

<211> 702

<212> DNA

<213> *Streptococcus agalactiae*

<400> 81

atggagttag taatttagaga tattcgtaag cggtttcagg aaacagaggt cttgagagga 60  
 gcaagttacc gattttattc aggtaaaata acaggggtct taggttaggaa tggtgctggg 120  
 aaaacaactt tatttaatat actttatggg gatcttgcag ctgacaacgg gaccatttgt 180  
 ttattgaagg ataatcacga gtatcctt accgataagg atattggat tggttattcc 240

gaaaactacc ttccagaatt tttaacaggg tatgaatttg taaaatttttta catggattta 300  
 catccttcag atgatttaat gacaatagat gattatggat attttatggaa aataggacaa 360  
 acagagcgtc atagaattat caaaggatat tctgatggaa tgaagagtaa gctctcatta 420  
 atttgcctga tgatttctaa gccaaaagta attttactag atgagccact gactgcagtt 480  
 gatgttgtat caagtattgc aataaaacgc cttttgttgg aattaagtga ggatcatatt 540  
 attatattat caactcatat aatggcctta gcagaagatc tatgtgatat tgtggctgta 600  
 ttagacaaag gaaaactcca aacattagat attgatcgta aacatgaaca attcgaagag 660  
 cgtcttcttc aagtgttcaa gggagatgaa tatgacaagt aa 702

<210> 82

<211> 233

<212> PRT

<213> *Streptococcus agalactiae*

<400> 82

Met Glu Leu Val Ile Arg Asp Ile Arg Lys Arg Phe Gln Glu Thr Glu  
 1 5 10 15

Val Leu Arg Gly Ala Ser Tyr Arg Phe Tyr Ser Gly Lys Ile Thr Gly  
 20 25 30

Val Leu Gly Arg Asn Gly Ala Gly Lys Thr Thr Leu Phe Asn Ile Leu  
 35 40 45

Tyr Gly Asp Leu Ala Ala Asp Asn Gly Thr Ile Cys Leu Leu Lys Asp  
 50 55 60

Asn His Glu Tyr Pro Leu Thr Asp Lys Asp Ile Gly Ile Val Tyr Ser  
 65 70 75 80

Glu Asn Tyr Leu Pro Glu Phe Leu Thr Gly Tyr Glu Phe Val Lys Phe  
 85 90 95

Tyr Met Asp Leu His Pro Ser Asp Asp Leu Met Thr Ile Asp Asp Tyr  
 100 105 110

Leu Asp Phe Met Glu Ile Gly Gln Thr Glu Arg His Arg Ile Ile Lys  
 115 120 125

Gly Tyr Ser Asp Gly Met Lys Ser Lys Leu Ser Leu Ile Cys Leu Met  
 130 135 140

Ile Ser Lys Pro Lys Val Ile Leu Leu Asp Glu Pro Leu Thr Ala Val  
 145 150 155 160

Asp Val Val Ser Ser Ile Ala Ile Lys Arg Leu Leu Glu Leu Ser  
 165 170 175

Glu Asp His Ile Ile Ile Leu Ser Thr His Ile Met Ala Leu Ala Glu  
 180 185 190

Asp Leu Cys Asp Ile Val Ala Val Leu Asp Lys Gly Lys Leu Gln Thr  
 195 200 205

Leu Asp Ile Asp Arg Lys His Glu Gln Phe Glu Glu Arg Leu Leu Gln  
 210 215 220

Val Leu Lys Gly Asp Glu Tyr Asp Lys  
 225 230

<210> 83

<211> 774

<212> DNA

<213> Streptococcus agalactiae

<400> 83

ttgtttatga gatatacataa tggaaatttt gaaggctttg caagacctcg aaaaacctgaa 60  
 ggtgtggata aaaaatccgc ttatattgtt ggttctggtt tagcaggatt agctgccgct 120  
 gtcttttaa tacgtgacgg tcaaattggat ggtcaacgta ttcatatttt tgaagaacta 180  
 ccttttctg gaggatcaact tgacgggtgc aaacgacctg atatcggtt tgtaacgcgt 240  
 ggtggtcgtg aaatggaaaa tcacttcgaa tgtatgtggg atatgtaccg ttccatcccc 300  
 tctctcgaag ttccagatgc ttcttatcta gatgaattttt attggcttga caaggatgat 360

cccaattcat ctaactgtcg ctcattcat aaacagggga atcgcttaga atctgatgg 420  
 gattttacac tcgaaacaca ttccaaagag ttagttaagc tagtcatgga gactgaagag 480  
 tcttaggtg ctaagacgt tgaagaagtt tttcaaaag aatttttga aagtaatttt 540  
 tggacttatt gggctactat gttgcottt gagaaatggc attcagcgat tgaaatgcgt 600  
 cgatatgcta tgcgctttat ccatcatatt ggtggctgc ctgatttcac ttcattaaaa 660  
 ttataataat ataatcaata tgattctatg gtgaaaccaa tcatcagtta ttagagtc 720  
 cataatgtag atgttcaatt tgatagcaag gtaactaata tctccgtaga ct 774

<210> 84

<211> 258

<212> PRT

<213> Streptococcus agalactiae

<400> 84

Met Phe Met Arg Tyr Thr Asn Gly Asn Phe Glu Ala Phe Ala Arg Pro  
 1 5 10 15

Arg Lys Pro Glu Gly Val Asp Lys Lys Ser Ala Tyr Ile Val Gly Ser  
 20 25 30

Gly Leu Ala Gly Leu Ala Ala Ala Val Phe Leu Ile Arg Asp Gly Gln  
 35 40 45

Met Asp Gly Gln Arg Ile His Ile Phe Glu Glu Leu Pro Leu Ser Gly  
 50 55 60

Gly Ser Leu Asp Gly Val Lys Arg Pro Asp Ile Gly Phe Val Thr Arg  
 65 70 75 80

Gly Gly Arg Glu Met Glu Asn His Phe Glu Cys Met Trp Asp Met Tyr  
 85 90 95

Arg Ser Ile Pro Ser Leu Glu Val Pro Asp Ala Ser Tyr Leu Asp Glu  
 100 105 110

Phe Tyr Trp Leu Asp Lys Asp Asp Pro Asn Ser Ser Asn Cys Arg Leu  
 115 120 125

Ile His Lys Gln Gly Asn Arg Leu Glu Ser Asp Gly Asp Phe Thr Leu  
 130 135 140

Gly Thr His Ser Lys Glu Leu Val Lys Leu Val Met Glu Thr Glu Glu  
 145 150 155 160

Ser Leu Gly Ala Lys Thr Ile Glu Glu Val Phe Ser Lys Glu Phe Phe  
 165 170 175

Glu Ser Asn Phe Trp Thr Tyr Trp Ala Thr Met Phe Ala Phe Glu Lys  
 180 185 190

Trp His Ser Ala Ile Glu Met Arg Arg Tyr Ala Met Arg Phe Ile His  
 195 200 205

His Ile Gly Gly Leu Pro Asp Phe Thr Ser Leu Lys Phe Asn Lys Tyr  
 210 215 220

Asn Gln Tyr Asp Ser Met Val Lys Pro Ile Ile Ser Tyr Leu Glu Ser  
 225 230 235 240

His Asn Val Asp Val Gln Phe Asp Ser Lys Val Thr Asn Ile Ser Val  
 245 250 255

Asp Phe

<210> 85

<211> 903

<212> DNA

<213> Streptococcus agalactiae

<400> 85

ttgttggctt cttttattat cgtccgttg tcaaaatcgc tttcgctaag gaggagcaat 60  
 atgaaaaaat tacttagatg gcttcctcct gtactttca ttattatcct tataggaatg 120  
 actatcttag gtaagtccta tatcaataaa gtaacagctc acaaaataaa actctataac 180

tctcgaatga ctcctactat tttaatttca ggatccagtg ctactcaaga acgatttaac 240  
 agcatgttag cacagctaa ccaaattggg gaaaaacata gcgtttaaa gttaactgtc 300  
 aaaaaagaca atagcattat ctacaatggg caaatttagcg gcaatgacca caaaccctac 360  
 attgtcattt gatttgaaaa taatgaagat ggttatacgta acatcaaaaa acaaaca 420  
 tggctacaga ttgctatgaa tgatcttcag aagaaatata aattttaaacg ttttaacgct 480  
 atcggtcattt caaatggtgg cttatcatgg actatttcc tagaagattt ttacgactct 540  
 gatgaattttt atatgaaatc attgttaaca atggaaacac cttttaactt tgaagaaagt 600  
 aacacctcaa atcatactca aatgcttaaa gatttaatca gtaataaagg aaatattcca 660  
 tcaagtctca tggtatacaa tttggcagga actaattcat atgatggtga taaaattgtt 720  
 ccatggctta gtgtggagac tggtaaatat attttccaag aaaccgctaa acactatacc 780  
 caactaacag taactggtaa taatgctaca cattctgact tgcctgataa tcctgaagtt 840  
 atccaatatg tcgcagaaaa aattcttaaa aatgagaaag gtaaatttacc aaaacctcac 900  
 taa 903

<210> 86

<211> 300

<212> PRT

<213> *Streptococcus agalactiae*

<400> 86

Met Leu Ala Ser Leu Phe Ile Val Arg Leu Ser Lys Ser Leu Ser Leu  
 1 5 10 15

Arg Arg Ser Asn Met Lys Lys Leu Leu Arg Trp Leu Pro Pro Val Leu  
 20 25 30

Phe Ile Ile Ile Leu Ile Gly Met Thr Ile Leu Gly Lys Ser Tyr Ile  
 35 40 45

Asn Lys Val Thr Ala His Lys Ile Lys Leu Tyr Asn Ser Arg Met Thr  
 50 55 60

Pro Thr Ile Leu Ile Ser Gly Ser Ser Ala Thr Gln Glu Arg Phe Asn  
 65 70 75 80

Ser Met Leu Ala Gln Leu Asn Gln Met Gly Glu Lys His Ser Val Leu  
 85 90 95

Lys Leu Thr Val Lys Lys Asp Asn Ser Ile Ile Tyr Asn Gly Gln Ile  
100 105 110

Ser Gly Asn Asp His Lys Pro Tyr Ile Val Ile Gly Phe Glu Asn Asn  
115 120 125

Glu Asp Gly Tyr Ser Asn Ile Lys Lys Gln Thr Lys Trp Leu Gln Ile  
130 135 140

Ala Met Asn Asp Leu Gln Lys Lys Tyr Lys Phe Lys Arg Phe Asn Ala  
145 150 155 160

Ile Gly His Ser Asn Gly Gly Leu Ser Trp Thr Ile Phe Leu Glu Asp  
165 170 175

Tyr Tyr Asp Ser Asp Glu Phe Asp Met Lys Ser Leu Leu Thr Met Gly  
180 185 190

Thr Pro Phe Asn Phe Glu Glu Ser Asn Thr Ser Asn His Thr Gln Met  
195 200 205

Leu Lys Asp Leu Ile Ser Asn Lys Gly Asn Ile Pro Ser Ser Leu Met  
210 215 220

Val Tyr Asn Leu Ala Gly Thr Asn Ser Tyr Asp Gly Asp Lys Ile Val  
225 230 235 240

Pro Phe Ala Ser Val Glu Thr Gly Lys Tyr Ile Phe Gln Glu Thr Ala  
245 250 255

Lys His Tyr Thr Gln Leu Thr Val Thr Gly Asn Asn Ala Thr His Ser  
260 265 270

Asp Leu Pro Asp Asn Pro Glu Val Ile Gln Tyr Val Ala Glu Lys Ile  
275 280 285

Leu Lys Asn Glu Lys Gly Lys Leu Pro Lys Pro His  
290 295 300

<210> 87  
<211> 912  
<212> DNA  
<213> *Streptococcus agalactiae*

<400> 87  
ttgaaattag gtattacaac attcgagag acaacaatcc ttgaagaaaac aaaccaaagc 60  
tattcacatc ctgagaggat tcgccaatta gttgctgaga ttgaactagc tgatcaagtt 120  
ggtttagatg tatatggtat tggagagcac catcgtaag attttgcggt ctctgcaccc 180  
gaaattatcc tagcagcagg agcggttaga actaataata tccgtttac tagtgcagta 240  
acgattctct cttccaatga tcctattcgc gtctatcgc aattttcaac gattgacgc 300  
ctttcaaattg gtagagcaga aattatggca gggcgtggtt cctttattga gtctttcca 360  
ttgtttggat acgatttagc ggattatgat gatttattta atgaaaaaaat ggatatgtt 420  
tttagcaatta actcagcgac aaatctcgat tgaaaggc atttgacaca aacagttaat 480  
gagcgcaccaa tttatccaag agcattacaa agacagttat caatatgggt ggcaacagga 540  
ggaaaatgtt attctacaat tcgtattgca gaacaagggt tgccaaattgt ttatgcaact 600  
atgggtggga atcccaaagc cttcgtcaa ttggccata tttataaaga agttggtaag 660  
tccgtaatgg acacaaacca ggaacaacta aaagttgctg ctcactttg gggatggatt 720  
gaagaggata atcaaaccgc tattgaccgt tatttttcc ctacgaaaca gaccgtcgat 780  
aatattgctt aaggacgccc tcattggctt gaaatgacta aagagcagta tttacgttca 840  
atagggtccag aaggtgttat tttttagga aatcctgaag tggttgcaca taaaattata 900  
ggactttgggt ga 912

<210> 88  
<211> 303  
<212> PRT  
<213> *Streptococcus agalactiae*

<400> 88  
Met Lys Leu Gly Ile Thr Thr Phe Gly Glu Thr Thr Ile Leu Glu Glu  
1 5 10 15

Thr Asn Gln Ser Tyr Ser His Pro Glu Arg Ile Arg Gln Leu Val Ala  
20 25 30

Glu Ile Glu Leu Ala Asp Gln Val Gly Leu Asp Val Tyr Gly Ile Gly  
35 40 45

Glu His His Arg Glu Asp Phe Ala Val Ser Ala Pro Glu Ile Ile Leu  
50 55 60

Ala Ala Gly Ala Val Arg Thr Asn Asn Ile Arg Leu Ser Ser Ala Val  
65 70 75 80

Thr Ile Leu Ser Ser Asn Asp Pro Ile Arg Val Tyr Gln Gln Phe Ser  
85 90 95

Thr Ile Asp Ala Leu Ser Asn Gly Arg Ala Glu Ile Met Ala Gly Arg  
100 105 110

Gly Ser Phe Ile Glu Ser Phe Pro Leu Phe Gly Tyr Asp Leu Ala Asp  
115 120 125

Tyr Asp Asp Leu Phe Asn Glu Lys Met Asp Met Leu Leu Ala Ile Asn  
130 135 140

Ser Ala Thr Asn Leu Asp Trp Lys Gly His Leu Thr Gln Thr Val Asn  
145 150 155 160

Glu Arg Pro Ile Tyr Pro Arg Ala Leu Gln Arg Gln Leu Ser Ile Trp  
165 170 175

Val Ala Thr Gly Gly Asn Val Asp Ser Thr Ile Arg Ile Ala Glu Gln  
180 185 190

Gly Leu Pro Ile Val Tyr Ala Thr Ile Gly Gly Asn Pro Lys Ala Phe  
195 200 205

Arg Gln Leu Val His Ile Tyr Lys Glu Val Gly Lys Ser Val Met Asp  
210 215 220

Thr Asn Gln Glu Gln Leu Lys Val Ala Ala His Ser Trp Gly Trp Ile  
225 230 235 240

100

Glu Glu Asp Asn Gln Thr Ala Ile Asp Arg Tyr Phe Phe Pro Thr Lys  
245 250 255

Gln Thr Val Asp Asn Ile Ala Lys Gly Arg Pro His Trp Ser Glu Met  
260 265 270

Thr Lys Glu Gln Tyr Leu Arg Ser Ile Gly Pro Glu Gly Ala Ile Phe  
275 280 285

Val Gly Asn Pro Glu Val Val Ala His Lys Ile Ile Gly Leu Trp  
290 295 300

<210> 89

<211> 693

<212> DNA

<213> Streptococcus agalactiae

<400> 89

atgatagagt ggattcaaac acatttacca aatgtatatac aaatgggttg ggaaggtgct 60  
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ggaggtttaa tgggattgtt aggaggttta ttcccttgc ttactatgttcc tagaggagtt 180  
attgctaata aatttagtatt tggagttta gataaagttt tttctgtttt tagagctctg 240  
cccttcatta ttcttcttgc tttgattgcg ccagtaactc gcgtaattgtt aggaacaaca 300  
cttggttcac cagcagctt ggtacctttt tctttggcag ttttccatt ttttgcgtt 360  
caagttcaag ttgttttagc tgaacttgc ggtggatgtt ttgaggctgc acaaggctca 420  
ggtggaaacac tttggatatt tattgtatgtt tatcttcgtt aaggcttacc agattttattt 480  
cgagtatcaa cggttactttt gatttcttta gtaggtgaaa cagctatggc tggcgctatt 540  
ggtgcaggag gattgggttc tggcttattt actaaaggat ataaactattc tcgtgtatgtt 600  
attacttttag tagcgactat tctgattttt ttatattttt tctttatcca atttttaggtt 660  
gattttttaa cacgtcgctt gagtcataaa taa 693

<210> 90

<211> 230

<212> PRT

<213> Streptococcus agalactiae

&lt;400&gt; 90

Met Ile Glu Trp Ile Gln Thr His Leu Pro Asn Val Tyr Gln Met Gly  
1 5 10 15

Trp Glu Gly Ala Tyr Gly Trp Gln Thr Ala Ile Val Gln Thr Leu Tyr  
20 25 30

Met Thr Phe Trp Ser Phe Leu Ile Gly Gly Leu Met Gly Leu Leu Gly  
35 40 45

Gly Leu Phe Leu Val Leu Thr Ser Pro Arg Gly Val Ile Ala Asn Lys  
50 55 60

Leu Val Phe Gly Val Leu Asp Lys Val Val Ser Val Phe Arg Ala Leu  
65 70 75 80

Pro Phe Ile Ile Leu Leu Ala Leu Ile Ala Pro Val Thr Arg Val Ile  
85 90 95

Val Gly Thr Thr Leu Gly Ser Pro Ala Ala Leu Val Pro Leu Ser Leu  
100 105 110

Ala Val Phe Pro Phe Ala Arg Gln Val Gln Val Val Leu Ala Glu  
115 120 125

Leu Asp Gly Gly Val Ile Glu Ala Ala Gln Ala Ser Gly Gly Thr Leu  
130 135 140

Trp Asp Ile Ile Val Val Tyr Leu Arg Glu Gly Leu Pro Asp Leu Ile  
145 150 155 160

Arg Val Ser Thr Val Thr Leu Ile Ser Leu Val Gly Glu Thr Ala Met  
165 170 175

Ala Gly Ala Ile Gly Ala Gly Leu Gly Ser Val Ala Ile Thr Lys  
180 185 190

Gly Tyr Asn Tyr Ser Arg Asp Asp Ile Thr Leu Val Ala Thr Ile Leu  
195 200 205

Ile Leu Leu Leu Ile Phe Phe Ile Gln Phe Leu Gly Asp Phe Leu Thr  
210 215 220

Arg Arg Leu Ser His Lys  
225 230

<210> 91

<211> 759

<212> DNA

<213> Streptococcus agalactiae

<400> 91

ttggcagtta gttttcatga agtatttggt tgggattctg ctttttttat tatgattatac 60  
aatattccat tgctccctct ttgctacttt ggcttaggta aacaaacott tttaaaaact 120  
gtctatggtt cttggatttt tcctgtttt attaagttaa cacaaagtgtt accaactttg 180  
acccacaact cactcctcgc agcactttt ggaggtgtta ttgttaggatg tggtttgggg 240  
attgtttttt ggagcgactc ttcaactggt ggaacgggaa ttatcattca attcttagga 300  
aaatataactc ctataagcct tggacaaggg gttatattga ttgatggact ttttacaatt 360  
gttggtttcc tagctttga cagtgatacg gttatgtttt ctattattgg gttgataact 420  
attagttata ttatataatgc tatccaaact ggatttacaa ccttaagcac tgtcttaatc 480  
gtttctcaag agcacaaaaa aattaagaca tatataataa ctgtcgcaga tagaggagta 540  
acagaaaattc ccgttaaagg gggatattct ggaactaatac aaatcatgct tatgacaact 600  
attgctgggt atgagtttgc taaattacaa gaggcaatag cagaaattga cggaaacagcc 660  
ttcataacag taactccaaac atcacaagct tctggacgtg gatttatgtct tcaaaaaat 720  
catggacgtc ttgatgaaga cattctttagt ccaatgtaa 759

<210> 92

<211> 252

<212> PRT

<213> Streptococcus agalactiae

<400> 92

Met Ala Val Ser Phe His Glu Val Phe Gly Trp Asp Ser Ala Phe Phe

1

5

10

15

Ile Met Ile Ile Asn Ile Pro Leu Leu Leu Cys Tyr Phe Gly Leu

20

25

30

Gly Lys Gln Thr Phe Leu Lys Thr Val Tyr Gly Ser Trp Ile Phe Pro

35

40

45

Val Phe Ile Lys Leu Thr Gln Ser Val Pro Thr Leu Thr His Asn Ser

50

55

60

Leu Leu Ala Ala Leu Phe Gly Gly Val Ile Val Gly Cys Gly Leu Gly

65

70

75

80

Ile Val Phe Trp Ser Asp Ser Ser Thr Gly Gly Thr Gly Ile Ile Ile

85

90

95

Gln Phe Leu Gly Lys Tyr Thr Pro Ile Ser Leu Gly Gln Gly Val Ile

100

105

110

Leu Ile Asp Gly Leu Val Thr Ile Val Gly Phe Leu Ala Phe Asp Ser

115

120

125

Asp Thr Val Met Phe Ser Ile Ile Gly Leu Ile Thr Ile Ser Tyr Ile

130

135

140

Ile Asn Ala Ile Gln Thr Gly Phe Thr Thr Leu Ser Thr Val Leu Ile

145

150

155

160

Val Ser Gln Glu His Gln Lys Ile Lys Thr Tyr Ile Asn Thr Val Ala

165

170

175

Asp Arg Gly Val Thr Glu Ile Pro Val Lys Gly Gly Tyr Ser Gly Thr  
 180 185 190

Asn Gln Ile Met Leu Met Thr Thr Ile Ala Gly Tyr Glu Phe Ala Lys  
 195 200 205

Leu Gln Glu Ala Ile Ala Glu Ile Asp Glu Thr Ala Phe Ile Thr Val  
 210 215 220

Thr Pro Thr Ser Gln Ala Ser Gly Arg Gly Phe Ser Leu Gln Lys Asn  
 225 230 235 240

His Gly Arg Leu Asp Glu Asp Ile Leu Met Pro Met  
 245 250

<210> 93

<211> 549

<212> DNA

<213> Streptococcus agalactiae

<400> 93

atgaaagaaa aacagtcgaa aaggcttatt tatatactac tgattgttcc cattatcttt 60  
 ataagtgttt ttacatacag tattagccag ctttctaaac tacttccacc aaaagaatta 120  
 gttattctaa gtccaaatag tcaagccatt ttaacaggaa cgattccagc ttttgggaa 180  
 aaatacggta taaaagttaa gcttattcaa ggtggacag ggcaactaat agatagatta 240  
 agtaaggagg gtaaggcagtta agggcggat attttctttg gaggaaatta tacgcaattt 300  
 gaaagtatacata aggcattgtt tgagtcttac gtatcaaaga atgttcatac tgttattcca 360  
 gactatatacc atccgagtga tacggcgaca ctttatacta taaatgggag tgtcttgatt 420  
 gtaaataacg aattagctaa gggacttacc atcaagagtt atgaagattt attacagcct 480  
 tccttaaaag gtaaaattgc ctttgcagat cctctagat cgacctgcaa gcatgcaagc 540  
 ttggcgtaa 549

&lt;210&gt; 94

&lt;211&gt; 182

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 94

Met Lys Glu Lys Gln Ser Lys Arg Leu Ile Tyr Ile Leu Leu Ile Val

1

5

10

15

Pro Ile Ile Phe Ile Ser Val Phe Thr Tyr Ser Ile Ser Gln Pro Ser

20

25

30

Lys Leu Leu Pro Pro Lys Glu Leu Val Ile Leu Ser Pro Asn Ser Gln

35

40

45

Ala Ile Leu Thr Gly Thr Ile Pro Ala Phe Glu Glu Lys Tyr Gly Ile

50

55

60

Lys Val Lys Leu Ile Gln Gly Gly Thr Gly Gln Leu Ile Asp Arg Leu

65

70

75

80

Ser Lys Glu Gly Lys Gln Leu Lys Ala Asp Ile Phe Phe Gly Gly Asn

85

90

95

Tyr Thr Gln Phe Glu Ser His Lys Ala Leu Phe Glu Ser Tyr Val Ser

100

105

110

Lys Asn Val His Thr Val Ile Pro Asp Tyr Ile His Pro Ser Asp Thr

115

120

125

Ala Thr Pro Tyr Thr Ile Asn Gly Ser Val Leu Ile Val Asn Asn Glu

130

135

140

Leu Ala Lys Gly Leu Thr Ile Lys Ser Tyr Glu Asp Leu Leu Gln Pro

145

150

155

160

Ser Leu Lys Gly Lys Ile Ala Phe Ala Asp Pro Leu Glu Ser Thr Cys

165

170

175

Lys His Ala Ser Leu Ala

180

<210> 95

<211> 368

<212> DNA

<213> Streptococcus agalactiae

<400> 95

cctcctatca aatgatgaca aacgtgagag gtacatggaa caaatgctct ttaaaattga 60  
 aaatgcaacc tggcagcgtg tggtaagagc actttatcgt aaatacaata aggaattttt 120  
 tacatatcca gcccacaaaa caaaccacca cgctttgaa tcaggattgg catatcacac 180  
 ggcaacaatg gttcggttgg cagatagtat cggagatatac tatccagaac ttaataaaag 240  
 tttgatgttt gctggattta tgctacatga ttttagccaag gtcataagat ttcgggtcc 300  
 tgataataca gaatatacta ttcgaggtaa tcttacatcggt catatttcac ttattgatga 360  
 ggaattaa 368

<210> 96

<211> 122

<212> PRT

<213> Streptococcus agalactiae

<400> 96

Leu Leu Ser Asn Asp Asp Lys Arg Glu Arg Tyr Met Glu Gln Met Leu

1

5

10

15

Phe Lys Ile Glu Asn Ala Thr Trp Gln Arg Val Val Arg Ala Leu Tyr

20

25

30

Arg Lys Tyr Asn Lys Glu Phe Phe Thr Tyr Pro Ala Ala Lys Thr Asn

35

40

45

His His Ala Phe Glu Ser Gly Leu Ala Tyr His Thr Ala Thr Met Val

50

55

60

Arg Leu Ala Asp Ser Ile Gly Asp Ile Tyr Pro Glu Leu Asn Lys Ser  
65 70 75 80

Leu Met Phe Ala Gly Ile Met Leu His Asp Leu Ala Lys Val Ile Glu  
85 90 95

Leu Ser Gly Pro Asp Asn Thr Glu Tyr Thr Ile Arg Gly Asn Leu Ile  
100 105 110

Gly His Ile Ser Leu Ile Asp Glu Glu Leu  
115 120

<210> 97

<211> 753

<212> DNA

<213> Streptococcus agalactiae

<400> 97

atgaaaaaaaaataaaaattatccgattcagtttagttgggtttctacttgcgatactatgc 60  
tttagtcttttttgcttttattgaagcctaacaatgtcaacaatcatcatctcaaaagttgagg 120  
aataggatataaaaaagacatcctctcaaaaaagaaataagaaattacgattaccagct 180  
gtatcatcaa aagattggaa cttgattttgtcaatcgtgaccataaaca tgaagaatta 240  
agtccagatgtggtgccctgttgaaaatatttatttgataaacgtattacgaagcaagct 300  
actcagtttttagaggctgc tagagcaattgattcacgaaacatataatttcgggttat 360  
cgtagtgttgcctatcagga gaagttgttc aatttctttagttactcaaga gatgactagt 420  
aaccctaatttgacgaggggacaaggcagaa aagttggtaaaacttactc tcagcctgca 480  
ggtgctagtg aacaccagac tggattagcgatggatatga gtactgtaga ttctttgaat 540  
gagagcgtacctagtagt cagtcagttg aaaaagatagctccacaata tggtttgtc 600  
ttacggtttc cggatggtaaacagcagaa acagggtaggttatgaaga ttggcattac 660  
cgctatgttg gggtagagtc tgcaaaatataggtcaaactcatttaacattagaagaa 720  
tacataacttattaaagga gaataaccaa tga 753

<210> 98

<211> 250

<212> PRT

<213> Streptococcus agalactiae

<400> 98

Met Lys Lys Asn Lys Ile Ile Arg Phe Ser Leu Val Gly Val Leu Leu  
1 5 10 15

Ala Ile Leu Cys Phe Ser Leu Phe Ala Leu Leu Lys Pro Asn Ser Gln  
20 25 30

Gln Ser Ser Ser Gln Lys Leu Arg Asn Glu Asp Ile Lys Lys Thr Ser  
35 40 45

Ser Gln Lys Arg Asn Lys Lys Leu Arg Leu Pro Ala Val Ser Ser Lys  
50 55 60

Asp Trp Asn Leu Ile Leu Val Asn Arg Asp His Lys His Glu Glu Leu  
65 70 75 80

Ser Pro Asp Val Val Pro Val Glu Asn Ile Tyr Leu Asp Lys Arg Ile  
85 90 95

Thr Lys Gln Ala Thr Gln Phe Leu Glu Ala Ala Arg Ala Ile Asp Ser  
100 105 110

Arg Glu His Leu Ile Ser Gly Tyr Arg Ser Val Ala Tyr Gln Glu Lys  
115 120 125

Leu Phe Asn Ser Tyr Val Thr Gln Glu Met Thr Ser Asn Pro Asn Leu  
130 135 140

Thr Arg Gly Gln Ala Glu Lys Leu Val Lys Thr Tyr Ser Gln Pro Ala  
145 150 155 160

Gly Ala Ser Glu His Gln Thr Gly Leu Ala Met Asp Met Ser Thr Val  
165 170 175

Asp Ser Leu Asn Glu Ser Asp Pro Arg Val Val Ser Gln Leu Lys Lys  
 180 185 190

Ile Ala Pro Gln Tyr Gly Phe Val Leu Arg Phe Pro Asp Gly Lys Thr  
 195 200 205

Ala Glu Thr Gly Val Gly Tyr Glu Asp Trp His Tyr Arg Tyr Val Gly  
 210 215 220

Val Glu Ser Ala Lys Tyr Met Val Lys His His Leu Thr Leu Glu Glu  
 225 230 235 240

Tyr Ile Thr Leu Leu Lys Glu Asn Asn Gln  
 245 250

<210> 99

<211> 351

<212> DNA

<213> Streptococcus agalactiae

<400> 99

ctgttatgtg gatttcttcc atcaattcct gtgtctaatt ccggggggta tggataata 60  
 acagttatga aaaataaaaa aatcttattt gggactggcc ttgctgggtg gggttactg 120  
 gcagctgctg gttataccct aactaaaaaa gtaacagatt ataaacgtca gcaaataact 180  
 cagaccttaa gagaactttt tagtcagatg ggtgatattc aggtatttta ttttaatgaa 240  
 tttgaatctg atattaaaat gaccagtgg ggtcttgc tggaaagatgg cagaattttc 300  
 gaattcattt atcgtcaagg tgttcttgat tatgtggagg tgagcaaatg a 351

<210> 100

<211> 116

<212> PRT

<213> Streptococcus agalactiae

<400> 100

Leu Leu Cys Gly Phe Leu Pro Ser Ile Pro Val Ser Asn Ser Gly Gly

110

Tyr Gly Ile Ile Thr Val Met Lys Asn Lys Lys Ile Leu Phe Gly Thr  
20 25 30

Gly Leu Ala Gly Val Gly Leu Leu Ala Ala Ala Gly Tyr Thr Leu Thr  
35 40 45

Lys Lys Val Thr Asp Tyr Lys Arg Gln Gln Ile Thr Gln Thr Leu Arg  
50 55 60

Glu Leu Phe Ser Gln Met Gly Asp Ile Gln Val Phe Tyr Phe Asn Glu  
65 70 75 80

Phe Glu Ser Asp Ile Lys Met Thr Ser Gly Gly Leu Val Leu Glu Asp  
85 90 95

Gly Arg Ile Phe Glu Phe Ile Tyr Arg Gln Gly Val Leu Asp Tyr Val  
100 105 110

Glu Val Ser Lys  
115

<210> 101

<211> 310

<212> DNA

<213> Streptococcus agalactiae

<400> 101

atgtatcaaa ctcagacaaa taaggaaaaa tttgtttat ttttgaatt atttatccca 60  
gtattgattt atcaatttgc taattttca gctacttttta ttgattcggt tatgactgga 120  
cagtatagtc agctacattt ggcaggtgtg tcaactgcta gtaattttagt gactccgttt 180  
ttcgctttat tagtaggtat gatttcagca ttagtaccag tagttggtca acatttgggt 240  
agagggaaata aagaacaaat tcgcacagaa tttcatcaat ttctatattt aggtttgata 300  
ctgtccttaa 310

&lt;210&gt; 102

&lt;211&gt; 103

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 102

Met	Tyr	Gln	Thr	Gln	Thr	Asn	Lys	Glu	Lys	Phe	Val	Leu	Phe	Leu	Lys
1															
															15

Leu	Phe	Ile	Pro	Val	Leu	Ile	Tyr	Gln	Phe	Ala	Asn	Phe	Ser	Ala	Thr
															30
20															

Phe	Ile	Asp	Ser	Val	Met	Thr	Gly	Gln	Tyr	Ser	Gln	Leu	His	Leu	Ala
35															45

Gly	Val	Ser	Thr	Ala	Ser	Asn	Leu	Trp	Thr	Pro	Phe	Phe	Ala	Leu	Leu
50															60

Val	Gly	Met	Ile	Ser	Ala	Leu	Val	Pro	Val	Val	Gly	Gln	His	Leu	Gly
65															80

Arg	Gly	Asn	Lys	Glu	Gln	Ile	Arg	Thr	Glu	Phe	His	Gln	Phe	Leu	Tyr
85															95

Leu	Gly	Leu	Ile	Leu	Ser	Leu									
100															

&lt;210&gt; 103

&lt;211&gt; 1098

&lt;212&gt; DNA

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 103

ctgctctttt	tagctaactt	ttcttaatttta	tggtataattt	gtatggattt	tttagctaga	60
atggagaaga	tgatgcaaga	tgttttcatt	ataggaagta	gagggttgcc	agctcgttac	120
ggtggttttt	aaacttttgt	ttcagaattt	atthaatcattc	aaaaaaagttc	cgacataaaaa	180

taccatgttg catgccttag tgataaaagaa catcatactc attttaactt tgctgacgct 240  
 gattgttta ctataaatcc tccccatta gggccagcac gtgtgattgc ttatgatatt 300  
 atggccatta attatgcct tgacttggtt aagacacatg atttaaaaga gcctatttt 360  
 tatatttttag gaaataacaat tggtgccctt atttggcatt ttgccaataa aatacataaa 420  
 gtcggtggtt tattgtatgt taatccggat ggttttagagt ggaagcgatc aaagtggct 480  
 cgtcccacac agcgttatcc aaaatacgcc gaaaaatgtt tgactaaaaa tgcagaccta 540  
 attatttctg ataataattgg tattgaaaat tacattcaat ctacctactc taatgtgaag 600  
 acaaggttca ttgcttacgg tacagagatt aattcttagga aattatcgatc agatgatcca 660  
 cgtgtcaaac agttgtttaa aaaatggaaat attaagtcta agggttacta tctaattcgat 720  
 ggtcgatttg tccctgaaaaa caattatgaa acggctatta gggagttcat ggcttcagat 780  
 actaagcggtg attttagttat tatctgttaac catcaaaaata acccctactt tgaaaatgg 840  
 tccttaaaga caaaccttca acaagataaa agatgttaagt ttgttaggtac gctctatgaa 900  
 aaagatctgc tggattatgt tcgtcaacaa gccttgcctt atattcatgg gcatgaagtt 960  
 ggcggacta atccaggact gcttgaggct ttagctaata ctgatttgaa tcttggctta 1020  
 gatgttgatt tcaacaaatc agtagcaggt ctctcaagtt ttactggac taaaaaaagag 1080  
 ggggattttag ctaagctt 1098

&lt;210&gt; 104

&lt;211&gt; 366

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 104

Met Leu Phe Leu Ala Asn Phe Ser Asn Leu Trp Tyr Asn Cys Met Asp

1

5

10

15

Cys Leu Ala Arg Met Glu Lys Met Met Gln Asp Val Phe Ile Ile Gly

20

25

30

Ser Arg Gly Leu Pro Ala Arg Tyr Gly Gly Phe Glu Thr Phe Val Ser

35

40

45

Glu Leu Ile Asn His Gln Lys Ser Ser Asp Ile Lys Tyr His Val Ala

50

55

60

Cys Leu Ser Asp Lys Glu His His Thr His Phe Asn Phe Ala Asp Ala

65

70

75

80

Asp Cys Phe Thr Ile Asn Pro Pro Gln Leu Gly Pro Ala Arg Val Ile  
85 90 95

Ala Tyr Asp Ile Met Ala Ile Asn Tyr Ala Leu Asp Leu Val Lys Thr  
100 105 110

His Asp Leu Lys Glu Pro Ile Phe Tyr Ile Leu Gly Asn Thr Ile Gly  
115 120 125

Ala Phe Ile Trp His Phe Ala Asn Lys Ile His Lys Val Gly Gly Leu  
130 135 140

Leu Tyr Val Asn Pro Asp Gly Leu Glu Trp Lys Arg Ser Lys Trp Ser  
145 150 155 160

Arg Pro Thr Gln Arg Tyr Leu Lys Tyr Ala Glu Lys Cys Met Thr Lys  
165 170 175

Asn Ala Asp Leu Ile Ile Ser Asp Asn Ile Gly Ile Glu Asn Tyr Ile  
180 185 190

Gln Ser Thr Tyr Ser Asn Val Lys Thr Arg Phe Ile Ala Tyr Gly Thr  
195 200 205

Glu Ile Asn Ser Arg Lys Leu Ser Ser Asp Asp Pro Arg Val Lys Gln  
210 215 220

Leu Phe Lys Lys Trp Asn Ile Lys Ser Lys Gly Tyr Tyr Leu Ile Val  
225 230 235 240

Gly Arg Phe Val Pro Glu Asn Asn Tyr Glu Thr Ala Ile Arg Glu Phe  
245 250 255

Met Ala Ser Asp Thr Lys Arg Asp Leu Val Ile Ile Cys Asn His Gln  
260 265 270

Asn Asn Pro Tyr Phe Glu Lys Leu Ser Leu Lys Thr Asn Leu Gln Gln  
275 280 285

Asp Lys Arg Val Lys Phe Val Gly Thr Leu Tyr Glu Lys Asp Leu Leu  
290 295 300

Asp Tyr Val Arg Gln Gln Ala Phe Ala Tyr Ile His Gly His Glu Val  
305 310 315 320

Gly Gly Thr Asn Pro Gly Leu Leu Glu Ala Leu Ala Asn Thr Asp Leu  
325 330 335

Asn Leu Val Leu Asp Val Asp Phe Asn Lys Ser Val Ala Gly Leu Ser  
340 345 350

Ser Phe Tyr Trp Thr Lys Lys Glu Gly Asp Leu Ala Lys Leu  
355 360 365

<210> 105

<211> 546

<212> DNA

<213> Streptococcus agalactiae

<400> 105

ttgaggagta atatggtaaa gacagcagg ttaatggcga catacaatgg cgaaaaattt 60  
atatctgaac aacttgattc aattcgccaa cagacattaa aaccagatta tgtattattg 120  
agggatgatt gttcaacgga tgaaacagt aatgtcgtca ataactatat cgcaaaacat 180  
gagttagaag gctggaaaat tgtaaaaac gacaaaaact taggctggcg tttaaatttt 240  
cgtcaattac ttattgatgt gttagcctat gaggttgact atgtctttt tagtgcataa 300  
gatgatattt ggtatcttga taaaaacgaa cgacagtttgc ccattatgtc agataaccct 360  
caaattgagg tttttagtgc agacggttgc atcaaaacgaa tgtctacaga agccagtggtt 420  
ccacattttc taacttttc ttcttagtgc agaatcagtc agtacccaa agtatatgt 480  
tatcaaacat tccgtcccg atggaccatt gctatgaaga gagattttgc gcaagctatc 540  
gcttga 546

&lt;210&gt; 106

&lt;211&gt; 181

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 106

Met Arg Ser Asn Met Val Lys Thr Ala Val Leu Met Ala Thr Tyr Asn  
1 5 10 15

Gly Glu Lys Phe Ile Ser Glu Gln Leu Asp Ser Ile Arg Gln Gln Thr  
20 25 30

Leu Lys Pro Asp Tyr Val Leu Leu Arg Asp Asp Cys Ser Thr Asp Glu  
35 40 45

Thr Val Asn Val Val Asn Asn Tyr Ile Ala Lys His Glu Leu Glu Gly  
50 55 60

Trp Lys Ile Val Lys Asn Asp Lys Asn Leu Gly Trp Arg Leu Asn Phe  
65 70 75 80

Arg Gln Leu Leu Ile Asp Val Leu Ala Tyr Glu Val Asp Tyr Val Phe  
85 90 95

Phe Ser Asp Gln Asp Asp Ile Trp Tyr Leu Asp Lys Asn Glu Arg Gln  
100 105 110

Phe Ala Ile Met Ser Asp Asn Pro Gln Ile Glu Val Leu Ser Ala Asp  
115 120 125

Val Asp Ile Lys Thr Met Ser Thr Glu Ala Ser Val Pro His Phe Leu  
130 135 140

Thr Phe Ser Ser Asp Arg Ile Ser Gln Tyr Pro Lys Val Tyr Asp  
145 150 155 160

Tyr Gln Thr Phe Arg Pro Gly Trp Thr Ile Ala Met Lys Arg Asp Phe  
165 170 175

Ala Gln Ala Ile Ala

180

<210> 107

<211> 639

<212> DNA

<213> Streptococcus agalactiae

<400> 107

gtgattatgg ataagtctat tcctaaagca actgctaaac gtttatact gtactaccgt 60  
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 gccccttaggtt tcgattctgc tactgttcga cgtgattttt cttattttgg tgaacttagga 180  
 cggcgtgggtt ttgggttatga tgtcaaaaaa cttatgaact tctttgcaga aatattgaac 240  
 gatcattctca caacaaatgt tatgctggtg ggggtgtggaa atatcggtag agctctcttg 300  
 cattatcggtt tccacgatcg caataaaatg caaatttcaa tggctttga tttagatagc 360  
 aatgattttag ttggtaaaac aaccgaggat ggaattcctg tctacggat ttcgactatc 420  
 aatgaccatt taatagatag tgatattgaa actgctatcc taacagtacc tagtacagaa 480  
 gcccaagaag ttgctgacat cttagtcaaa gcaggtataa aaggcatctt gagttttct 540  
 ccagttcatt taacattacc aaaagatatc attgttcagt atgtagattt aacaagcga 600  
 ttacaaactt tactttatcc catgaaccag cagcgataa 639

<210> 108

<211> 212

<212> PRT

<213> Streptococcus agalactiae

<400> 108

Met Ile Met Asp Lys Ser Ile Pro Lys Ala Thr Ala Lys Arg Leu Ser

1

5

10

15

Leu Tyr Tyr Arg Ile Phe Lys Arg Phe Asn Thr Asp Gly Ile Glu Lys

20

25

30

Ala Ser Ser Lys Gln Ile Ala Asp Ala Leu Gly Ile Asp Ser Ala Thr

35

40

45

Val Arg Arg Asp Phe Ser Tyr Phe Gly Glu Leu Gly Arg Arg Gly Phe  
50 55 60

Gly Tyr Asp Val Lys Lys Leu Met Asn Phe Phe Ala Glu Ile Leu Asn  
65 70 75 80

Asp His Ser Thr Thr Asn Val Met Leu Val Gly Cys Gly Asn Ile Gly  
85 90 95

Arg Ala Leu Leu His Tyr Arg Phe His Asp Arg Asn Lys Met Gln Ile  
100 105 110

Ser Met Ala Phe Asp Leu Asp Ser Asn Asp Leu Val Gly Lys Thr Thr  
115 120 125

Glu Asp Gly Ile Pro Val Tyr Gly Ile Ser Thr Ile Asn Asp His Leu  
130 135 140

Ile Asp Ser Asp Ile Glu Thr Ala Ile Leu Thr Val Pro Ser Thr Glu  
145 150 155 160

Ala Gln Glu Val Ala Asp Ile Leu Val Lys Ala Gly Ile Lys Gly Ile  
165 170 175

Leu Ser Phe Ser Pro Val His Leu Thr Leu Pro Lys Asp Ile Ile Val  
180 185 190

Gln Tyr Val Asp Leu Thr Ser Glu Leu Gln Thr Leu Leu Tyr Phe Met  
195 200 205

Asn Gln Gln Arg  
210

&lt;210&gt; 109

&lt;211&gt; 476

&lt;212&gt; DNA

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 109

atgggtgcta aaggagcaga tgtcattctc gtttatcac actctggcat tggagatgat 60  
cgatatgaag aaggtaaga aaacgttggc tatcaaattg ccagcatcaa gggagtggat 120  
gccgttgtt a cgggacactc acacgctgaa tttccatcg gtaacggtac tggcttctat 180  
gaaaaataca ctggagttga tggtatcaat gaaaaataa atggaacacc ttttacaatg 240  
gcaggcaagt acggggatca ctttgttatt attgatttag gacttagtta tactaatgga 300  
aaatggcaag tctccgaaag cagtgtaaa atccgtaaaa ttgatatgaa ctcaacaact 360  
gctgacgagc gtatcattgc attggcttaag gaagcacacg atggcactat caactatg 420  
cgccaacaag tagtacaac aactgcgcca attacaagtt actttgcact agttaa 476

&lt;210&gt; 110

&lt;211&gt; 158

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 110

Met Gly Ala Lys Gly Ala Asp Val Ile Leu Val Leu Ser His Ser Gly  
1 5 10 15

Ile Gly Asp Asp Arg Tyr Glu Glu Gly Glu Glu Asn Val Gly Tyr Gln  
20 25 30

Ile Ala Ser Ile Lys Gly Val Asp Ala Val Val Thr Gly His Ser His  
35 40 45

Ala Glu Phe Pro Ser Gly Asn Gly Thr Gly Phe Tyr Glu Lys Tyr Thr  
50 55 60

Gly Val Asp Gly Ile Asn Gly Lys Ile Asn Gly Thr Pro Val Thr Met  
65 70 75 80

Ala Gly Lys Tyr Gly Asp His Leu Gly Ile Ile Asp Leu Gly Leu Ser  
 85 90 95

Tyr Thr Asn Gly Lys Trp Gln Val Ser Glu Ser Ser Ala Lys Ile Arg  
 100 105 110

Lys Ile Asp Met Asn Ser Thr Thr Ala Asp Glu Arg Ile Ile Ala Leu  
 115 120 125

Ala Lys Glu Ala His Asp Gly Thr Ile Asn Tyr Val Arg Gln Gln Val  
 130 135 140

Gly Thr Thr Thr Ala Pro Ile Thr Ser Tyr Phe Ala Leu Val  
 145 150 155

<210> 111

<211> 170

<212> DNA

<213> Streptococcus agalactiae

<400> 111

ttgtcaataa ggtttcaaata cagcttggaaa tatgataaaaa taaaacagat tgtaagtgc 60  
 tgtttaagct tgtttttcag agaggttttt atgaatacaa acacaataaa aaagggttgta 120  
 gcgactggaa ttggagctgc actttttatc attataggta tgctagttaa 170

<210> 112

<211> 56

<212> PRT

<213> Streptococcus agalactiae

<400> 112

Met Ser Ile Arg Phe Gln Ile Ser Leu Lys Tyr Asp Lys Ile Lys Gln  
 1 5 10 15

Ile Val Ser Asp Cys Leu Ser Leu Phe Phe Arg Glu Val Phe Met Asn  
 20 25 30

120

Thr Asn Thr Ile Lys Lys Val Val Ala Thr Gly Ile Gly Ala Ala Leu  
35 40 45

Phe Ile Ile Ile Gly Met Leu Val  
50 55

<210> 113  
<211> 242  
<212> DNA  
<213> Streptococcus agalactiae

<400> 113  
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tcaaggtagtc atactgcagg agctgtccgc attggtaaag ttgtccattc tatttttgtt 120  
gaaccttagtg aagtaacacctt tcatttatac aattcttttg ctaaaaactta ccaaggacac 180  
ggtactgata aagcatttgtt tgcaaggatt ctaggaatgg atacagataa tccagatatt 240  
aa 242

<210> 114  
<211> 80  
<212> PRT  
<213> Streptococcus agalactiae

<400> 114  
Met Lys His Leu Lys Phe Gln Ser Val Phe Asp Ile Ile Gly Pro Val  
1 5 10 15

Met Ile Gly Pro Ser Ser His Thr Ala Gly Ala Val Arg Ile Gly  
20 25 30

Lys Val Val His Ser Ile Phe Gly Glu Pro Ser Glu Val Thr Phe His  
35 40 45

Leu Tyr Asn Ser Phe Ala Lys Thr Tyr Gln Gly His Gly Thr Asp Lys  
50 55 60

Ala Leu Val Ala Gly Ile Leu Gly Met Asp Thr Asp Asn Pro Asp Ile  
65 70 75 80

<210> 115

<211> 122

<212> DNA

<213> *Streptococcus agalactiae*

<400> 115

gtgtcagaag gtgtttaat gtttctaaaa gaagatgacg tagagacttt tcttcatatc 60  
ctgacaaatt catttagcca atttatggca caatttgatt tgtgtcataa ggaaatgatt 120  
aa 122

<210> 116

<211> 83

<212> DNA

<213> *Streptococcus agalactiae*

<400> 116

atgacctaca aagattacac aggttagat cggactgaac ttttgagtaa agtgcgtcat 60  
atgatgtccg acaaacgttt taa 83

<210> 117

<211> 27

<212> PRT

<213> *Streptococcus agalactiae*

<400> 117

Met Thr Tyr Lys Asp Tyr Thr Gly Leu Asp Arg Thr Glu Leu Leu Ser

1

5

10

15

Lys Val Arg His Met Met Ser Asp Lys Arg Phe  
20 25

<210> 118  
<211> 94  
<212> DNA  
<213> Streptococcus agalactiae

<400> 118  
ctgagttggg tcttggaaac ggtcctgtca atcatactag ctatcaagga gactaaaatg 60  
tatttagaac aactaaaaga ggtaaaatcct ttaa 94

<210> 119  
<211> 31  
<212> PRT  
<213> Streptococcus agalactiae

<400> 119  
Met Ser Trp Val Leu Glu Thr Val Leu Ser Ile Ile Leu Ala Ile Lys  
1 5 10 15

Glu Thr Lys Met Tyr Leu Glu Gln Leu Lys Glu Val Asn Pro Leu  
20 25 30

<210> 120  
<211> 1230  
<212> DNA  
<213> Streptococcus agalactiae

<400> 120  
gtgaaaaaaaaa aattagtctc atcacttcta aagtgttctc taatcattat tggtagcttt 60  
gctgggtggag catttgctag ttttgcataatg aatcataatg acaatattcc aaatgggtgg 120  
gtcactaaaaa ctagtaagt aaattataat aacataacgc ctacaacaaa agctgttaaa 180  
aaggtaaaaa atagtggtgt ttctgttatac aattataaac aacaagagag tcgttctgac 240

ctatcagact tctatagtca ttttttggg aatcaggggg gcaacactga taagggctta 300  
caagttacg gtgaaggctc tggagtcac tataaaaaaag atggtaaaaa tgcctatgtt 360  
gtcactaata accacgtcat tgatgggct aaacaaatg aaattcaact agctgatggc 420  
tcaaaagcag ttggaaact tgggttca gatacctact ctgatggc cgtcgtcaaa 480  
attccatcatcag ataaagttc aaatattgca gaatttgctg attcatcaaa actcaacatt 540  
ggtaaaactg ctatagcgat cgaaagccct ctggactg agtatgcaaa ttctgtact 600  
caaggtattg tatctagtt aaaaagaact gtaacaatga ctaatgaaga aggacaaaca 660  
gtttctacaa atgctatcca gacggatgct gctatcaatc ctggtaattc aggtggagca 720  
cttataata ttgaaggaca gtttattgga attaattcta gtaaaatttc ttctacatca 780  
aatcaaacct caggacaatc gtcaggaaat agcgttgaag gtatggatt tgccattcc 840  
tcaaatgatg ttgttaagat tatcaatcaa cttgagagta acggacaagt agagagac 900  
gtcttaggta ttctatggc tggattaagt aatttaccat ccgtgttat tagtaaactg 960  
aaaatccaa gtaatgttac taatggatt gtagtagcat ctatccaatc tggcatgcca 1020  
gctcaaggca aactaaagaa atacgatgtc attactaaag ttgacgataa agaagtagca 1080  
tctccaagtg atttacaaag ttactctat ggccaccagg taggggattc cataacagta 1140  
acctttatc gtggtaaaaa taaacaaaca gtcactataa aacttactaa aacttagtaaa 1200  
qattnagcta aacaacgagc aaataactaa 1230

<210> 121

<211> 409

<212> PRT

<213> *Streptococcus agalactiae*

<400> 121

Met Lys Lys Lys Leu Val Ser Ser Leu Leu Lys Cys Ser Leu Ile Ile

1

5

10

15

Leu Val Ser Phe Ala Gly Gly Ala Phe Ala Ser Phe Val Met Asn His

20

25

30

Asn Asn Asn Ile Pro Asn Gly Gly Val Thr Lys Thr Ser Lys Val Asn

35

40

45

Tyr Asn Asn Ile Thr Pro Thr Thr Lys Ala Val Lys Lys Val Gln Asn  
50 55 60

Ser Val Val Ser Val Ile Asn Tyr Lys Gln Gln Glu Ser Arg Ser Asp  
65 70 75 80

Leu Ser Asp Phe Tyr Ser His Phe Phe Gly Asn Gln Gly Gly Asn Thr  
85 90 95

Asp Lys Gly Leu Gln Val Tyr Gly Glu Gly Ser Gly Val Ile Tyr Lys  
100 105 110

Lys Asp Gly Lys Asn Ala Tyr Val Val Thr Asn Asn His Val Ile Asp  
115 120 125

Gly Ala Lys Gln Ile Glu Ile Gln Leu Ala Asp Gly Ser Lys Ala Val  
130 135 140

Gly Lys Leu Val Gly Ser Asp Thr Tyr Ser Asp Leu Ala Val Val Lys  
145 150 155 160

Ile Pro Ser Asp Lys Val Ser Asn Ile Ala Glu Phe Ala Asp Ser Ser  
165 170 175

Lys Leu Asn Ile Gly Glu Thr Ala Ile Ala Ile Gly Ser Pro Leu Gly  
180 185 190

Thr Glu Tyr Ala Asn Ser Val Thr Gln Gly Ile Val Ser Ser Leu Lys  
195 200 205

Arg Thr Val Thr Met Thr Asn Glu Glu Gly Gln Thr Val Ser Thr Asn  
210 215 220

Ala Ile Gln Thr Asp Ala Ala Ile Asn Pro Gly Asn Ser Gly Gly Ala  
225 230 235 240

Leu Ile Asn Ile Glu Gly Gln Val Ile Gly Ile Asn Ser Ser Lys Ile  
245 250 255

Ser Ser Thr Ser Asn Gln Thr Ser Gly Gln Ser Ser Gly Asn Ser Val  
 260 265 270

Glu Gly Met Gly Phe Ala Ile Pro Ser Asn Asp Val Val Lys Ile Ile  
 275 280 285

Asn Gln Leu Glu Ser Asn Gly Gln Val Glu Arg Pro Ala Leu Gly Ile  
 290 295 300

Ser Met Ala Gly Leu Ser Asn Leu Pro Ser Asp Val Ile Ser Lys Leu  
 305 310 315 320

Lys Ile Pro Ser Asn Val Thr Asn Gly Ile Val Val Ala Ser Ile Gln  
 325 330 335

Ser Gly Met Pro Ala Gln Gly Lys Leu Lys Lys Tyr Asp Val Ile Thr  
 340 345 350

Lys Val Asp Asp Lys Glu Val Ala Ser Pro Ser Asp Leu Gln Ser Leu  
 355 360 365

Leu Tyr Gly His Gln Val Gly Asp Ser Ile Thr Val Thr Phe Tyr Arg  
 370 375 380

Gly Glu Asn Lys Gln Thr Val Thr Ile Lys Leu Thr Lys Thr Ser Lys  
 385 390 395 400

Asp Leu Ala Lys Gln Arg Ala Asn Asn  
 405

<210> 122

<211> 1923

<212> DNA

<213> Streptococcus agalactiae

<400> 122

atgttaaaat ggtataaaaa caaaggaggg aggatgataa tgaagaaatg tttttggct 60  
 atttgttttag ctcttagttt ttttatggtt tcagttcaag cagatgaggt ggactataac 120

attcctcatt atgaggtaa tctaactatt cacaatgata atagtgctga ttttacagag 180  
 aaggtaactt accaatttga ttgcgttat aatggacagt atgtcacgtt aggtacggcg 240  
 ggttaagttat ctgacaattt tgatattaat aataagccac aggttgaagt ttcaattaat 300  
 ggttaagttaa ggaaagttag ttaccagata gaagatttg aggatggcta ccgtttgaaa 360  
 gtgttaatg gtggtaaagc aggtgatact gttaaagtca atgttcagtg gaaactaaaa 420  
 aatgttctat ttatgcataa ggatgttgg gaacttaact ggattcctat tagcgactgg 480  
 gataaaaacgt tagagaaagt agattttgg atatcaactg acaaaaaggt tgctttct 540  
 cgtcttggg ggcacttggg ttatctaaa actcctccta aaataagaca aaataataat 600  
 cgttaccatt tgacagctt taatgtaaac aaacgattag aatttcatgg ttattggat 660  
 agatcttatt ttaatctacc tacaaacagt aaaaataatt acaagaaaaa aattgaacat 720  
 caagagaaga taatagagcg tcatggttt atcctaagtt tcttgtaag gatattatta 780  
 ccttcattct ttattattgt gacactattc atctcaatta gggtgccct gtttagaaaa 840  
 aaagttaata aatacggca attccctaag gatcatcatt tataatgaaac acctgaggac 900  
 ctttcaccat tagagttaac tcaaagcatt tataatgaa gctttaaaaa tttcaagat 960  
 gaggagaaga aaactcacct tataatgaa gaacaactca tacagtcaat tctattagac 1020  
 ttgattgata gaaaagtatt gaattatgat gataacttgt tatctctagc taacttagat 1080  
 agagcttctg atgcagaaat agattttata gagttgctt ttgcggattc tacagatgg 1140  
 aagccagatc aactctttc taattaccaa tttagttata aagaaacact acgtgaactg 1200  
 aaaaagcagc acaaggcttc agatctgcaa aatcaaataatgac gacgcccagg aagtaatgcc 1260  
 ttatcaagaa ttacgcgtct cacaagggtt atttctaaag acaatataaa ctctctttaga 1320  
 agaaaaggaa ttcatcccc ttatcgtaaa atgttccat aagagtctaa agaattatct 1380  
 aggttaaaaa gatcagttt cctatcacct ttatattttt ttgttggat aatttatacg 1440  
 ctttttttaa attatttac ctatttctgt atctatctt tattgttgg tttttatcctg 1500  
 ttgttgaata aaatcatttt tatgtatgaca agaaaaataa gtaacggta tattgttaact 1560  
 gaaagatggag caagtcgtgt ctaccaatgg actagttta ggaacatgct aaggatatac 1620  
 aaatcgttt atcggttca gtttagaaagt atcgatattt ggaatcgaaat attggtttac 1680  
 gctactttat tcggctacgc tgaccgtgtt gagaaagttac tcagagtggaa ccaaataatg 1740  
 attccagaaa gatttgcataa cattgatagt catcgatttgc cgatttcaatgctt caatcaatct 1800  
 agtaatcatt tttcaacgtt aactgaagat gtttagtcacg cttctaaattt tagtgttaat 1860  
 tcaggcggtt cttcagggtgg tttctcaggc ggcggaggcg gcgagggtgg cgggtgccttc 1920  
 taa 1923

&lt;210&gt; 123

&lt;211&gt; 640

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 123

Met Leu Lys Trp Tyr Thr Asn Lys Gly Gly Arg Met Ile Met Lys Lys  
 1 5 10 15

Cys Phe Leu Ala Ile Cys Leu Ala Leu Ser Phe Phe Met Val Ser Val  
 20 25 30

Gln Ala Asp Glu Val Asp Tyr Asn Ile Pro His Tyr Glu Gly Asn Leu  
 35 40 45

Thr Ile His Asn Asp Asn Ser Ala Asp Phe Thr Glu Lys Val Thr Tyr  
 50 55 60

Gln Phe Asp Ser Ser Tyr Asn Gly Gln Tyr Val Thr Leu Gly Thr Ala  
 65 70 75 80

Gly Lys Leu Ser Asp Asn Phe Asp Ile Asn Asn Lys Pro Gln Val Glu  
 85 90 95

Val Ser Ile Asn Gly Lys Val Arg Lys Val Ser Tyr Gln Ile Glu Asp  
 100 105 110

Leu Glu Asp Gly Tyr Arg Leu Lys Val Phe Asn Gly Glu Ala Gly  
 115 120 125

Asp Thr Val Lys Val Asn Val Gln Trp Lys Leu Lys Asn Val Leu Phe  
 130 135 140

Met His Lys Asp Val Gly Glu Leu Asn Trp Ile Pro Ile Ser Asp Trp  
 145 150 155 160

Asp Lys Thr Leu Glu Lys Val Asp Phe Trp Ile Ser Thr Asp Lys Lys  
 165 170 175

Val Ala Leu Ser Arg Leu Trp Gly His Leu Gly Tyr Leu Lys Thr Pro  
 180 185 190

Pro Lys Ile Arg Gln Asn Asn Asn Arg Tyr His Leu Thr Ala Phe Asn  
195 200 205

Val Asn Lys Arg Leu Glu Phe His Gly Tyr Trp Asp Arg Ser Tyr Phe  
210 215 220

Asn Leu Pro Thr Asn Ser Lys Asn Asn Tyr Lys Lys Lys Ile Glu His  
225 230 235 240

Gln Glu Lys Ile Ile Glu Arg His Gly Phe Ile Leu Ser Phe Leu Leu  
245 250 255

Arg Ile Leu Leu Pro Ser Phe Phe Ile Ile Val Thr Leu Phe Ile Ser  
260 265 270

Ile Arg Val Phe Leu Phe Arg Lys Lys Val Asn Lys Tyr Gly Gln Phe  
275 280 285

Pro Lys Asp His His Leu Tyr Glu Ala Pro Glu Asp Leu Ser Pro Leu  
290 295 300

Glu Leu Thr Gln Ser Ile Tyr Ser Met Ser Phe Lys Asn Phe Gln Asp  
305 310 315 320

Glu Glu Lys Lys Thr His Leu Ile Ser Gln Glu Gln Leu Ile Gln Ser  
325 330 335

Ile Leu Leu Asp Leu Ile Asp Arg Lys Val Leu Asn Tyr Asp Asp Asn  
340 345 350

Leu Leu Ser Leu Ala Asn Leu Asp Arg Ala Ser Asp Ala Glu Ile Asp  
355 360 365

Phe Ile Glu Phe Ala Phe Ala Asp Ser Thr Ser Leu Lys Pro Asp Gln  
370 375 380

Leu Phe Ser Asn Tyr Gln Phe Ser Tyr Lys Glu Thr Leu Arg Glu Leu  
385 390 395 400

Lys Lys Gln His Lys Ala Ser Asp Leu Gln Asn Gln Met Arg Arg Arg  
405 410 415

Gly Ser Asn Ala Leu Ser Arg Ile Thr Arg Leu Thr Arg Leu Ile Ser  
420 425 430

Lys Asp Asn Ile Asn Ser Leu Arg Arg Lys Gly Ile Ser Ser Pro Tyr  
435 440 445

Arg Lys Met Ser Ser Glu Glu Ser Lys Glu Leu Ser Arg Leu Lys Arg  
450 455 460

Phe Ser Tyr Leu Ser Pro Leu Ile Ser Phe Val Val Ile Ile Tyr Thr  
465 470 475 480

Leu Phe Leu Asn Tyr Phe Thr Tyr Phe Cys Ile Tyr Leu Leu Leu Phe  
485 490 495

Gly Val Ile Leu Leu Asn Lys Ile Ile Phe Met Met Thr Arg Lys  
500 505 510

Ile Ser Asn Gly Tyr Ile Val Thr Glu Asp Gly Ala Ser Arg Val Tyr  
515 520 525

Gln Trp Thr Ser Phe Arg Asn Met Leu Arg Asp Ile Lys Ser Phe Asp  
530 535 540

Arg Ser Glu Leu Glu Ser Ile Val Leu Trp Asn Arg Ile Leu Val Tyr  
545 550 555 560

Ala Thr Leu Phe Gly Tyr Ala Asp Arg Val Glu Lys Val Leu Arg Val  
565 570 575

Asn Gln Ile Asp Ile Pro Glu Arg Phe Ala Asn Ile Asp Ser His Arg  
580 585 590

Phe Ala Ile Ser Val Asn Gln Ser Ser Asn His Phe Ser Thr Ile Thr  
595 600 605

Glu Asp Val Ser His Ala Ser Asn Phe Ser Val Asn Ser Gly Gly Ser  
 610 615 620

Ser Gly Gly Phe Ser Gly Gly Gly Gly Gly Gly Gly Ala Phe  
 625 630 635 640

<210> 124

<211> 2712

<212> DNA

<213> *Streptococcus agalactiae*

<400> 124

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 tggagaggggt ttcgtttac ttactaatac ctgtcccaaa ttccatggat tatattggta 120  
 caaggtgaaa cccaaagatac caatcaagca cttggaaaag taattgttaa aaaaacggga 180  
 gacaatgcta caccattagg caaagcgact tttgtgttaa aaaatgacaa tgataagtca 240  
 gaaacaagtc acgaaacggt agagggttct ggagaagcaa ccttgaaaaa cataaaacct 300  
 ggagactaca cattaagaga agaaacagca ccaattggtt ataaaaaaac tgataaaacc 360  
 tggaaagtta aagttgcaga taacggagca acaataatcg agggtatgga tgcagataaa 420  
 gcagagaaac gaaaagaagt tttgaatgcc caatatccaa aatcagctat ttatgaggat 480  
 acaaaaagaaa attacccatt agttaatgta gagggttcca aagttggtga acaatacaaa 540  
 gcattgaatc caataaaatgg aaaagatggt cgaagagaga ttgctgaagg ttgggttatca 600  
 aaaaaaaatc caggggtcaa tgatctcgat aagaataaat ataaaattga attaactgtt 660  
 gagggtaaaa ccactgttga aacgaaagaa cttaatcaac cactagatgt cggtgtgcta 720  
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 gctggggaaag cagttgaaaaa gctgattgtat aaaattacat caaataaaga caatagagta 840  
 gctttgtga catatgcctc aaccatttt gatgtactg aagcgaccgt atcaaaggga 900  
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 gttaatattc taaagtcaag aattccaaag gaagcggagc atataaatgg ggatcgacg 1080  
 ctctatcaat ttgggtgcgac atttactcaa aaagctctaa tgaaagcaaa tgaaattttta 1140  
 gagacacaaaaa gttctaattgc tagaaaaaaa cttattttc acgtaactgaa tggtgtccct 1200  
 acgatgtctt atgccataaaa tttaatcct tatatatcaa catcttacca aaaccagttt 1260

aattctttt taaataaaat accagataga agtggattc tccaagagga ttttataatc 1320  
 aatggtgatg attatcaaat agtaaaagga gatggagaga gttttaact gtttcggat 1380  
 agaaaagttc ctgttactgg aggaacgaca caagcagctt atcgagtacc gcaaaatcaa 1440  
 ctctctgtaa tgagtaatga gggatatgca attaatacgatg gatataatttta tctctattgg 1500  
 agagattaca actgggtcta tccatggat cctaagacaa agaaagttc tgcaacgaaa 1560  
 caaatcaaaa ctcatggta gccaacaaca ttatacttta atggaaatat aagacctaaa 1620  
 gtttatgaca ttttactgt tgggatttgt gttaaacggag atcctggtgc aactcctt 1680  
 gaagctgaga aatttatgca atcaatatca agtaaaacag aaaattatac taatgttgc 1740  
 gatacaaata aaatttatga tgagctaaat aaatacttta aaacaattgt tgaggaaaaa 1800  
 cattctattt tgatggaaa tgtgactgt cctatggag agatgattga attccaatta 1860  
 aaaaatggtc aaagtttac acatgatgt tacgtttgg ttggaaatga tggcagtcaa 1920  
 ttaaaaaatg gtgtggctct tggggacca aacagtgtg gggaaatttt aaaagatgtt 1980  
 acagtgactt atgataagac atctcaaacc atcaaatac atcatttgc ctttaggaagt 2040  
 ggacaaaaag tagttttac ctatgatgt cgtttaaaag ataactatac aagtaacaaa 2100  
 ttttacaata caaataatcg tacaacgcta agtccgaaga gtggaaaaga accaaatact 2160  
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 agtaatcaga agaaaatggg tgagggtgaa tttattaaag ttaataaaaga caaacattca 2280  
 gaatcgctt tggggactaa gtttcaactt cagatagaaa aagattttc tgggtataag 2340  
 caattttttc cagagggaaag tgatgttaca acaaagaatg atggtaaaat ttattttaaa 2400  
 gcacttcaag atggtaacta taaattatac gaaatttcaa gtccagatgg ctatatacg 2460  
 gttaaaacga aacctgtgt gacatttaca attcaaaatg gagaagttac gaaacctgaaa 2520  
 gcagatccaa atgctaataa aaatcaaacc ggttatctt aaggaaatgg taaacatctt 2580  
 attaccaaca ctcccaaacc cccaccagg gttttccta aaacaggggg aattggtaca 2640  
 attgtctata tattagttgg ttctactttt atgatactta ccatttgc tttccgtcgt 2700  
 aaacaattgt aa 2712

&lt;210&gt; 125

&lt;211&gt; 903

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 125

Met Met Ile Val Asn Asn Gly Tyr Leu Glu Gly Arg Lys Met Lys Lys

1

5

10

15

Arg Gln Lys Ile Trp Arg Gly Leu Ser Val Thr Leu Leu Ile Leu Ser

20

25

30

Gln Ile Pro Phe Gly Ile Leu Val Gln Gly Glu Thr Gln Asp Thr Asn  
35 40 45

Gln Ala Leu Gly Lys Val Ile Val Lys Lys Thr Gly Asp Asn Ala Thr  
50 55 60

Pro Leu Gly Lys Ala Thr Phe Val Leu Lys Asn Asp Asn Asp Lys Ser  
65 70 75 80

Glu Thr Ser His Glu Thr Val Glu Gly Ser Gly Glu Ala Thr Phe Glu  
85 90 95

Asn Ile Lys Pro Gly Asp Tyr Thr Leu Arg Glu Glu Thr Ala Pro Ile  
100 105 110

Gly Tyr Lys Lys Thr Asp Lys Thr Trp Lys Val Lys Val Ala Asp Asn  
115 120 125

Gly Ala Thr Ile Ile Glu Gly Met Asp Ala Asp Lys Ala Glu Lys Arg  
130 135 140

Lys Glu Val Leu Asn Ala Gln Tyr Pro Lys Ser Ala Ile Tyr Glu Asp  
145 150 155 160

Thr Lys Glu Asn Tyr Pro Leu Val Asn Val Glu Gly Ser Lys Val Gly  
165 170 175

Glu Gln Tyr Lys Ala Leu Asn Pro Ile Asn Gly Lys Asp Gly Arg Arg  
180 185 190

Glu Ile Ala Glu Gly Trp Leu Ser Lys Lys Asn Pro Gly Val Asn Asp  
195 200 205

Leu Asp Lys Asn Lys Tyr Lys Ile Glu Leu Thr Val Glu Gly Lys Thr  
210 215 220

Thr Val Glu Thr Lys Glu Leu Asn Gln Pro Leu Asp Val Val Val Leu  
225 230 235 240

Leu Asp Asn Ser Asn Ser Met Asn Asn Glu Arg Ala Asn Asn Ser Gln  
245 250 255

Arg Ala Leu Lys Ala Gly Glu Ala Val Glu Lys Leu Ile Asp Lys Ile  
260 265 270

Thr Ser Asn Lys Asp Asn Arg Val Ala Leu Val Thr Tyr Ala Ser Thr  
275 280 285

Ile Phe Asp Gly Thr Glu Ala Thr Val Ser Lys Gly Val Ala Asp Gln  
290 295 300

Asn Gly Lys Ala Leu Asn Asp Ser Val Ser Trp Asp Tyr His Lys Thr  
305 310 315 320

Thr Phe Thr Ala Thr Thr His Asn Tyr Ser Tyr Leu Asn Leu Thr Asn  
325 330 335

Asp Ala Asn Glu Val Asn Ile Leu Lys Ser Arg Ile Pro Lys Glu Ala  
340 345 350

Glu His Ile Asn Gly Asp Arg Thr Leu Tyr Gln Phe Gly Ala Thr Phe  
355 360 365

Thr Gln Lys Ala Leu Met Lys Ala Asn Glu Ile Leu Glu Thr Gln Ser  
370 375 380

Ser Asn Ala Arg Lys Lys Leu Ile Phe His Val Thr Asp Gly Val Pro  
385 390 395 400

Thr Met Ser Tyr Ala Ile Asn Phe Asn Pro Tyr Ile Ser Thr Ser Tyr  
405 410 415

Gln Asn Gln Phe Asn Ser Phe Leu Asn Lys Ile Pro Asp Arg Ser Gly  
420 425 430

Ile Leu Gln Glu Asp Phe Ile Ile Asn Gly Asp Asp Tyr Gln Ile Val  
435 440 445

Lys Gly Asp Gly Glu Ser Phe Lys Leu Phe Ser Asp Arg Lys Val Pro  
450 455 460

Val Thr Gly Gly Thr Thr Gln Ala Ala Tyr Arg Val Pro Gln Asn Gln  
465 470 475 480

Leu Ser Val Met Ser Asn Glu Gly Tyr Ala Ile Asn Ser Gly Tyr Ile  
485 490 495

Tyr Leu Tyr Trp Arg Asp Tyr Asn Trp Val Tyr Pro Phe Asp Pro Lys  
500 505 510

Thr Lys Lys Val Ser Ala Thr Lys Gln Ile Lys Thr His Gly Glu Pro  
515 520 525

Thr Thr Leu Tyr Phe Asn Gly Asn Ile Arg Pro Lys Gly Tyr Asp Ile  
530 535 540

Phe Thr Val Gly Ile Gly Val Asn Gly Asp Pro Gly Ala Thr Pro Leu  
545 550 555 560

Glu Ala Glu Lys Phe Met Gln Ser Ile Ser Ser Lys Thr Glu Asn Tyr  
565 570 575

Thr Asn Val Asp Asp Thr Asn Lys Ile Tyr Asp Glu Leu Asn Lys Tyr  
580 585 590

Phe Lys Thr Ile Val Glu Glu Lys His Ser Ile Val Asp Gly Asn Val  
595 600 605

Thr Asp Pro Met Gly Glu Met Ile Glu Phe Gln Leu Lys Asn Gly Gln  
610 615 620

Ser Phe Thr His Asp Asp Tyr Val Leu Val Gly Asn Asp Gly Ser Gln  
625 630 635 640

Leu Lys Asn Gly Val Ala Leu Gly Gly Pro Asn Ser Asp Gly Gly Ile  
645 650 655

Leu Lys Asp Val Thr Val Thr Tyr Asp Lys Thr Ser Gln Thr Ile Lys  
660 665 670

Ile Asn His Leu Asn Leu Gly Ser Gly Gln Lys Val Val Leu Thr Tyr  
675 680 685

Asp Val Arg Leu Lys Asp Asn Tyr Ile Ser Asn Lys Phe Tyr Asn Thr  
690 695 700

Asn Asn Arg Thr Thr Leu Ser Pro Lys Ser Glu Lys Glu Pro Asn Thr  
705 710 715 720

Ile Arg Asp Phe Pro Ile Pro Lys Ile Arg Asp Val Arg Glu Phe Pro  
725 730 735

Val Leu Thr Ile Ser Asn Gln Lys Lys Met Gly Glu Val Glu Phe Ile  
740 745 750

Lys Val Asn Lys Asp Lys His Ser Glu Ser Leu Leu Gly Ala Lys Phe  
755 760 765

Gln Leu Gln Ile Glu Lys Asp Phe Ser Gly Tyr Lys Gln Phe Val Pro  
770 775 780

Glu Gly Ser Asp Val Thr Thr Lys Asn Asp Gly Lys Ile Tyr Phe Lys  
785 790 795 800

Ala Leu Gln Asp Gly Asn Tyr Lys Leu Tyr Glu Ile Ser Ser Pro Asp  
805 810 815

Gly Tyr Ile Glu Val Lys Thr Lys Pro Val Val Thr Phe Thr Ile Gln  
820 825 830

Asn Gly Glu Val Thr Asn Leu Lys Ala Asp Pro Asn Ala Asn Lys Asn  
835 840 845

Gln Ile Gly Tyr Leu Glu Gly Asn Gly Lys His Leu Ile Thr Asn Thr  
850 855 860

Pro Lys Arg Pro Pro Gly Val Phe Pro Lys Thr Gly Gly Ile Gly Thr  
 865 870 875 880

Ile Val Tyr Ile Leu Val Gly Ser Thr Phe Met Ile Leu Thr Ile Cys  
 885 890 895

Ser Phe Arg Arg Lys Gln Leu  
 900

<210> 126

<211> 1251

<212> DNA

<213> Streptococcus agalactiae

<400> 126

atgaatagaa aagttgagga aaaaatggct gggaatcgta ataacgataat gaatgtctat 60  
 tggcatttt gtggcaaaag ccaagatgaa gtaaaaaaaaaa ttattgcagg taatgggttt 120  
 ttcatttgta atgaatgtgt ggccttatca caagaaatta ttaaggaaga attagctgag 180  
 gaagtactgg ctcatttagc agaagtacca aaacctaagg aactattaga aatattaaat 240  
 caatatgttg tagggcaaga tcgtgctaaa cgtgctttag cagttgctgt ctacaatcat 300  
 tacaagcgtg ttagttatac cgagagtagt gacgatgatg tagatttgca aaaatccaac 360  
 attttgcata tgggtccaaac tggctcagga aaaaccttct tagcacaaac actggctaaa 420  
 agccttaatg taccgtttgc tattgcagat gcgacttcat tgaccgaagc aggatacggt 480  
 ggagaagatg ttgagaatat tcttcattaa ttgattcaag ctgctgatta taatgtcgaa 540  
 cgtgctgagc gtggatttat ctacgttgcata gaaatagata aaattgctaa gaaaggcgaa 600  
 aatgtttcta tcacacgtga tgtgtctgtt gaaggtgtac agcaagccct tcttaaaatt 660  
 attgagggta cggttagcaag tggccccca cagggggc gtaaacatcc taaccaagaa 720  
 atgattcaaa ttaataccaa gaacatccctt tttattgtcg gtgggtcttt tgatggatt 780  
 gaagaccttg tgaagcaacg tttaggcgaa aaagttattt gttttggaca gacaagccgt 840  
 aaaattgtatg acaacgccttc ttatatgcaaa gagataattt ctgaggatat tcaaaagttt 900  
 ggactgattc cagagtttat tggccgttta ccagtagttt cagcgtttaga acttcttact 960  
 gcagaagatc tgggtcgat tctgacagaa ccacgcaatg ctttggttaa acaataccaa 1020  
 accttattat cttatgtatgg tgttagattt gatattgacc aggtatgcctt attggctatc 1080  
 gctgataagg ctatcgagcg caagactggt gcacgtggtt tacgttctat tattgaagaa 1140  
 acgatgcttgc atatcatgtt tggaaattcca agccaagaag atgtaacaaa agttcgtatc 1200  
 acaaaggctg ctgttgaggg tactgacaag cctgttttag agacggctta g 1251

&lt;210&gt; 127

&lt;211&gt; 416

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 127

Met Asn Arg Lys Val Glu Glu Lys Met Ala Gly Asn Arg Asn Asn Asp

1 5 10 15

Met Asn Val Tyr Cys Ser Phe Cys Gly Lys Ser Gln Asp Glu Val Lys

20 25 30

Lys Ile Ile Ala Gly Asn Gly Val Phe Ile Cys Asn Glu Cys Val Ala

35 40 45

Leu Ser Gln Glu Ile Ile Lys Glu Glu Leu Ala Glu Glu Val Leu Ala

50 55 60

His Leu Ala Glu Val Pro Lys Pro Lys Glu Leu Leu Glu Ile Leu Asn

65 70 75 80

Gln Tyr Val Val Gly Gln Asp Arg Ala Lys Arg Ala Leu Ala Val Ala

85 90 95

Val Tyr Asn His Tyr Lys Arg Val Ser Tyr Thr Glu Ser Ser Asp Asp

100 105 110

Asp Val Asp Leu Gln Lys Ser Asn Ile Leu Met Ile Gly Pro Thr Gly

115 120 125

Ser Gly Lys Thr Phe Leu Ala Gln Thr Leu Ala Lys Ser Leu Asn Val

130 135 140

Pro Phe Ala Ile Ala Asp Ala Thr Ser Leu Thr Glu Ala Gly Tyr Val

145 150 155 160

Gly Glu Asp Val Glu Asn Ile Leu Leu Lys Leu Ile Gln Ala Ala Asp  
165 170 175

Tyr Asn Val Glu Arg Ala Glu Arg Gly Ile Ile Tyr Val Asp Glu Ile  
180 185 190

Asp Lys Ile Ala Lys Lys Gly Glu Asn Val Ser Ile Thr Arg Asp Val  
195 200 205

Ser Gly Glu Gly Val Gln Gln Ala Leu Leu Lys Ile Ile Glu Gly Thr  
210 215 220

Val Ala Ser Val Pro Pro Gln Gly Gly Arg Lys His Pro Asn Gln Glu  
225 230 235 240

Met Ile Gln Ile Asn Thr Lys Asn Ile Leu Phe Ile Val Gly Gly Ala  
245 250 255

Phe Asp Gly Ile Glu Asp Leu Val Lys Gln Arg Leu Gly Glu Lys Val  
260 265 270

Ile Gly Phe Gly Gln Thr Ser Arg Lys Ile Asp Asp Asn Ala Ser Tyr  
275 280 285

Met Gln Glu Ile Ile Ser Glu Asp Ile Gln Lys Phe Gly Leu Ile Pro  
290 295 300

Glu Phe Ile Gly Arg Leu Pro Val Val Ala Ala Leu Glu Leu Leu Thr  
305 310 315 320

Ala Glu Asp Leu Val Arg Ile Leu Thr Glu Pro Arg Asn Ala Leu Val  
325 330 335

Lys Gln Tyr Gln Thr Leu Leu Ser Tyr Asp Gly Val Glu Leu Glu Phe  
340 345 350

Asp Gln Asp Ala Leu Leu Ala Ile Ala Asp Lys Ala Ile Glu Arg Lys  
355 360 365

Thr Gly Ala Arg Gly Leu Arg Ser Ile Ile Glu Glu Thr Met Leu Asp  
370 375 380

Ile Met Phe Glu Ile Pro Ser Gln Glu Asp Val Thr Lys Val Arg Ile  
385 390 395 400

Thr Lys Ala Ala Val Glu Gly Thr Asp Lys Pro Val Leu Glu Thr Ala  
405 410 415

<210> 128

<211> 786

<212> DNA

<213> Streptococcus agalactiae

<400> 128

atgaaaagat tacataaaact gtttataacc gtaattgcta cattaggtat gttggggta 60  
atgacctttg gtcttccaac gcagccgcaa aacgtaacgc cgatagtaca tgctgatgtc 120  
aattcatctg ttgatacggag ccaggaattt caaaataatt taaaaatgc tattggtaac 180  
ctaccatttc aatatgttaa tggtattttt gaattaaata ataatcagac aaatttaaat 240  
gctgatgtca atgttaaagc gtatgttcaa aatacaattt acaatcaaca aagactatca 300  
actgctaatg caatgcttga tagaaccatt cgtcaatatac aaaatcgcaag agataaccat 360  
cttcccgatg caaattggaa accatttagt tggcatcaag tagctactaa tgaccattat 420  
gggcatgcag tcgacaaggg gcatttaatt gcctatgctt tagctggaaa tttcaaagg 480  
tggatgtctt ccgtgtcaaa tcctcaaaat gttgtcacac aaacagctca ttccaaaccaa 540  
tcaaataaaa aaatcaatcg tggacaaaat tattatgaaa gcttagttcg taaggcggtt 600  
gaccaaaaaca aacgtgttcg ttaccgtgta actccattgt accgtaatga tactgattta 660  
gttccatttg caatgcaccc agaagctaaa tcacaagatg gcacattaga atttaatgtt 720  
gctattccaa acacacaaggc atcatacact atggattatg caacaggaga aataaacacta 780  
aattaa 786

&lt;210&gt; 129

&lt;211&gt; 261

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 129

Met Lys Arg Leu His Lys Leu Phe Ile Thr Val Ile Ala Thr Leu Gly  
1 5 10 15

Met Leu Gly Val Met Thr Phe Gly Leu Pro Thr Gln Pro Gln Asn Val  
20 25 30

Thr Pro Ile Val His Ala Asp Val Asn Ser Ser Val Asp Thr Ser Gln  
35 40 45

Glu Phe Gln Asn Asn Leu Lys Asn Ala Ile Gly Asn Leu Pro Phe Gln  
50 55 60

Tyr Val Asn Gly Ile Tyr Glu Leu Asn Asn Asn Gln Thr Asn Leu Asn  
65 70 75 80

Ala Asp Val Asn Val Lys Ala Tyr Val Gln Asn Thr Ile Asp Asn Gln  
85 90 95

Gln Arg Leu Ser Thr Ala Asn Ala Met Leu Asp Arg Thr Ile Arg Gln  
100 105 110

Tyr Gln Asn Arg Arg Asp Thr Thr Leu Pro Asp Ala Asn Trp Lys Pro  
115 120 125

Leu Gly Trp His Gln Val Ala Thr Asn Asp His Tyr Gly His Ala Val  
130 135 140

Asp Lys Gly His Leu Ile Ala Tyr Ala Leu Ala Gly Asn Phe Lys Gly  
145 150 155 160

Trp Asp Ala Ser Val Ser Asn Pro Gln Asn Val Val Thr Gln Thr Ala  
165 170 175

His Ser Asn Gln Ser Asn Gln Lys Ile Asn Arg Gly Gln Asn Tyr Tyr  
 180 185 190

Glu Ser Leu Val Arg Lys Ala Val Asp Gln Asn Lys Arg Val Arg Tyr  
 195 200 205

Arg Val Thr Pro Leu Tyr Arg Asn Asp Thr Asp Leu Val Pro Phe Ala  
 210 215 220

Met His Leu Glu Ala Lys Ser Gln Asp Gly Thr Leu Glu Phe Asn Val  
 225 230 235 240

Ala Ile Pro Asn Thr Gln Ala Ser Tyr Thr Met Asp Tyr Ala Thr Gly  
 245 250 255

Glu Ile Thr Leu Asn  
 260

<210> 130

<211> 621

<212> DNA

<213> Streptococcus agalactiae

<400> 130

atgaaaaact atcgaaaaact tattgtacta ctacttctaa tctttttgc catttttatg 60  
 ggagcatatg cttacacgca tattgttcaa aaaagatccc taactagcaa tactattgaa 120  
 aaaactctac ctgtggtaaa tcagattaag cctcaaacca ttaaagaata ccaaattac 180  
 ttaactaagg tagctaaacg taatgttctt cctgtagaca ttcttcaggc attaaataat 240  
 gaaaaggttag aaattactgc tactgatggc atgcaaacat tcacttgaa tgataaaaat 300  
 aatcctaagc aaaaggttat cttctatgtt catggaggat catatatcca tcaagcttcc 360  
 gaattacaat atattttgt caataaacta gctaaaaat tagatgcaa agttgtcttt 420  
 cctatattacc ctaaagctcc tacatataat tatagtgatg ctatcccaa aataaaaaaaa 480  
 ttataccaaa atacattagc tagcgtcaca tctcacaaac agattatcct agtaggtgaa 540  
 agtgcagggcg gaggccttgc ttttaggtatt gctgataacc ttgcacggag catatcaaac 600  
 aacccaaaaga aattatttta a 621

&lt;210&gt; 131

&lt;211&gt; 206

&lt;212&gt; PRT

&lt;213&gt; Streptococcus agalactiae

&lt;400&gt; 131

Met	Lys	Asn	Tyr	Arg	Lys	Leu	Ile	Val	Leu	Leu	Leu	Ile	Phe	Phe
1														
														15

Ala	Ile	Phe	Met	Gly	Ala	Tyr	Ala	Tyr	Thr	His	Ile	Val	Glu	Lys	Arg	
														20	25	30

Ser	Leu	Thr	Ser	Asn	Thr	Ile	Glu	Lys	Thr	Leu	Pro	Val	Val	Asn	Gln	
														35	40	45

Ile	Lys	Pro	Gln	Thr	Ile	Lys	Glu	Tyr	Gln	Asn	Tyr	Leu	Thr	Lys	Val	
														50	55	60

Ala	Lys	Arg	Asn	Val	Leu	Pro	Val	Asp	Ile	Pro	Gln	Ala	Leu	Asn	Asn		
														65	70	75	80

Glu	Lys	Val	Glu	Ile	Thr	Ala	Thr	Asp	Gly	Met	Gln	Thr	Phe	Thr	Trp	
														85	90	95

Asn	Asp	Lys	Asn	Asn	Pro	Lys	Gln	Lys	Val	Ile	Phe	Tyr	Val	His	Gly	
														100	105	110

Gly	Ser	Tyr	Ile	His	Gln	Ala	Ser	Glu	Leu	Gln	Tyr	Ile	Phe	Val	Asn	
														115	120	125

Lys	Leu	Ala	Lys	Lys	Leu	Asp	Ala	Lys	Val	Val	Phe	Pro	Ile	Tyr	Pro	
														130	135	140

Lys	Ala	Pro	Thr	Tyr	Asn	Tyr	Ser	Asp	Ala	Ile	Pro	Lys	Ile	Lys	Lys		
														145	150	155	160

Leu	Tyr	Gln	Asn	Thr	Leu	Ala	Ser	Val	Thr	Ser	His	Lys	Gln	Ile	Ile	
														165	170	175

Leu Val Gly Glu Ser Ala Gly Gly Gly Leu Ala Leu Gly Ile Ala Asp  
 180 185 190

Asn Leu Ala Arg Ser Ile Ser Asn Asn Gln Lys Lys Leu Phe  
 195 200 205

<210> 132

<211> 885

<212> DNA

<213> Streptococcus agalactiae

<400> 132

ttgattctaa taacttccta tggataata tctttatcac aaaaatttag ggaatttatt 60  
 atgaagttaa aacatattgt cttaggatta gccttaacaa cacttttagg agtcacattt 120  
 agtaatcaag aagttcagc aagctcaact tcaagtaaag ttgttaaagt tgggttatg 180  
 acctttctg acactgaaaa agcacgttgg gataaaattg aaaagctagt aggtgataaa 240  
 gctaaaatca aatttacaga atttacagat tatacacaac caaatcaagc gacagccaat 300  
 aaggatgtgg atattaatgc ctttcaacat tacaattct tagaaaactg gaataaggaa 360  
 aataagaaaa acttaattcc acttgaaaag acttacttag ctccaattcg tatctattct 420  
 gagaaggtaa aatctcttaa aaaattgaaa aaaggagcca ctattgcaat tccaaatgat 480  
 gcaacaaatg gtagccgtgc attgtatgtc cttagtcag caggttaat caaattgaat 540  
 gtttctggta agaagggttgc aacagttgt aatatcacat ctaataaaaaa ggatattaat 600  
 attcaggagt tagatgcgag tcaaacacca cgtgcactca aagatgtaga tgcagctatt 660  
 attaataata catacattga gcaagctaattaaaacctt cagatgctat ctttggtag 720  
 aaatcagata aaaattcaaa acaatggatt aatatcattg cgggacgtaa aaattggaaa 780  
 aagcaaaaga acgctaaagc tateccaagct atcttggatg cttatcacac agatgaagt 840  
 aaaaaagttt tcaaagatac tttagctgat attccacaat ggtaa 885

<210> 133

<211> 294

<212> PRT

<213> Streptococcus agalactiae

<400> 133

Met Ile Leu Ile Thr Ser Tyr Gly Ile Ile Ser Leu Ser Gln Lys Leu

Arg Glu Phe Ile Met Lys Leu Lys His Ile Val Leu Gly Leu Ala Leu  
20 25 30

Thr Thr Leu Leu Gly Val Thr Phe Ser Asn Gln Glu Val Ser Ala Ser  
35 40 45

Ser Thr Ser Ser Lys Val Val Lys Val Gly Val Met Thr Phe Ser Asp  
50 55 60

Thr Glu Lys Ala Arg Trp Asp Lys Ile Glu Lys Leu Val Gly Asp Lys  
65 70 75 80

Ala Lys Ile Lys Phe Thr Glu Phe Thr Asp Tyr Thr Gln Pro Asn Gln  
85 90 95

Ala Thr Ala Asn Lys Asp Val Asp Ile Asn Ala Phe Gln His Tyr Asn  
100 105 110

Phe Leu Glu Asn Trp Asn Lys Glu Asn Lys Asn Leu Ile Pro Leu  
115 120 125

Glu Lys Thr Tyr Leu Ala Pro Ile Arg Ile Tyr Ser Glu Lys Val Lys  
130 135 140

Ser Leu Lys Lys Leu Lys Lys Gly Ala Thr Ile Ala Ile Pro Asn Asp  
145 150 155 160

Ala Thr Asn Gly Ser Arg Ala Leu Tyr Val Leu Gln Ser Ala Gly Leu  
165 170 175

Ile Lys Leu Asn Val Ser Gly Lys Lys Val Ala Thr Val Ala Asn Ile  
180 185 190

Thr Ser Asn Lys Lys Asp Ile Asn Ile Gln Glu Leu Asp Ala Ser Gln  
195 200 205

Thr Pro Arg Ala Leu Lys Asp Val Asp Ala Ala Ile Ile Asn Asn Thr  
210 215 220

Tyr Ile Glu Gln Ala Asn Leu Lys Pro Ser Asp Ala Ile Phe Val Glu  
 225 230 235 240

Lys Ser Asp Lys Asn Ser Lys Gln Trp Ile Asn Ile Ile Ala Gly Arg  
 245 250 255

Lys Asn Trp Lys Lys Gln Lys Asn Ala Lys Ala Ile Gln Ala Ile Leu  
 260 265 270

Asp Ala Tyr His Thr Asp Glu Val Lys Lys Val Ile Lys Asp Thr Ser  
 275 280 285

Ala Asp Ile Pro Gln Trp  
 290

<210> 134  
 <211> 1350  
 <212> DNA  
 <213> Streptococcus agalactiae

<400> 134  
 atgtcaaatc aatatgatta tatcgttatt ggtggaggta gtgcaggcag tggtaaccgct 60  
 aatagggcaag ccatgtatgg agcaaaagtc ctgttaattg aaggtggaca agtaggtgga 120  
 acttgtgtta acttaggttg tgtacctaag aaaatcatgt ggtatggtgc acaagtttct 180  
 gagacactcc ataagtatac ttcaagttat ggtttgaag ccaataatct tagtttgat 240  
 tttaacttc taaaagctaa tcgcgatgct tacgtgcagc ggtctagaca gtcgtatgcc 300  
 gctaattttg agcgtaatgg ggtcgaaaag attgatggat ttgctcggtt tattgataac 360  
 catactatttgc aagtgaatgg tcagcaatataa aagctccctc acattactat tgcaacaggt 420  
 ggacacccttc tttaccctga tattattgga agtgaacttg gtgagacttc tgatgatttt 480  
 tttggatggg agaccttacc aaattctata ttgattgttg gggcgggcta tatcgccggca 540  
 gaacttgctg gagtggttaa tgaatttaggc gttgaaaccc atcttgatttgcatt tagaaaaagac 600  
 catattctac gcggatttga tgacatggta acaagtggagg ttatggctga aatggagaaa 660  
 tcaggtatct cttaacatgc taaccatgtc cctaaatctc tttaaacgcga tgaagggtggc 720  
 aagttgattt ttgaagctga aatgggaaa acgcttgcg ttgatcgtgt aatatggct 780  
 atcggccgtg gaccaaattgt agacatggga cttgaaaata ccgatattgt tttaaatgt 840  
 aaagattata tcaaaaacaga tgaatttgag aatacttctg tagatggcgt gtatgctatt 900

ggagatgtta atggaaaaat tgccttgaca ccggtagcaa ttgcagcagg tcgtcgctta 960  
 tcagaaagac ttttaatca taaagataac gaaaaattag attaccataa tgtaccttca 1020  
 gttatttta ctcaccctgt aattgggacg gtaggacttt cagaagcagc agctatcgag 1080  
 caatttggaa aagataatat caaagtctat acatcaactt ttacctctat gtatacggct 1140  
 gttaccagta atcgccaagc agttaagatg aagctcataa cccttaggaaa agaggaaaaa 1200  
 gttattggc ttcatggtgt tggttatggt attgatgaaa tgattcaagg ttttcagtt 1260  
 gctatcaaaa tggggctac taaagcagac tttgatgata ctggtgctat tcacccaact 1320  
 ggatctgagg aatttgttac aatgcgctaa 1350

<210> 135

<211> 449

<212> PRT

<213> Streptococcus agalactiae

<400> 135

Met Ser Asn Gln Tyr Asp Tyr Ile Val Ile Gly Gly Gly Ser Ala Gly  
 1 5 10 15

Ser Gly Thr Ala Asn Arg Ala Ala Met Tyr Gly Ala Lys Val Leu Leu  
 20 25 30

Ile Glu Gly Gly Gln Val Gly Gly Thr Cys Val Asn Leu Gly Cys Val  
 35 40 45

Pro Lys Lys Ile Met Trp Tyr Gly Ala Gln Val Ser Glu Thr Leu His  
 50 55 60

Lys Tyr Ser Ser Gly Tyr Gly Phe Glu Ala Asn Asn Leu Ser Phe Asp  
 65 70 75 80

Phe Thr Thr Leu Lys Ala Asn Arg Asp Ala Tyr Val Gln Arg Ser Arg  
 85 90 95

Gln Ser Tyr Ala Ala Asn Phe Glu Arg Asn Gly Val Glu Lys Ile Asp  
 100 105 110

Gly Phe Ala Arg Phe Ile Asp Asn His Thr Ile Glu Val Asn Gly Gln  
 115 120 125

Gln Tyr Lys Ala Pro His Ile Thr Ile Ala Thr Gly Gly His Pro Leu  
130 135 140

Tyr Pro Asp Ile Ile Gly Ser Glu Leu Gly Glu Thr Ser Asp Asp Phe  
145 150 155 160

Phe Gly Trp Glu Thr Leu Pro Asn Ser Ile Leu Ile Val Gly Ala Gly  
165 170 175

Tyr Ile Ala Ala Glu Leu Ala Gly Val Val Asn Glu Leu Gly Val Glu  
180 185 190

Thr His Leu Ala Phe Arg Lys Asp His Ile Leu Arg Gly Phe Asp Asp  
195 200 205

Met Val Thr Ser Glu Val Met Ala Glu Met Glu Lys Ser Gly Ile Ser  
210 215 220

Leu His Ala Asn His Val Pro Lys Ser Leu Lys Arg Asp Glu Gly Gly  
225 230 235 240

Lys Leu Ile Phe Glu Ala Glu Asn Gly Lys Thr Leu Val Val Asp Arg  
245 250 255

Val Ile Trp Ala Ile Gly Arg Gly Pro Asn Val Asp Met Gly Leu Glu  
260 265 270

Asn Thr Asp Ile Val Leu Asn Asp Lys Asp Tyr Ile Lys Thr Asp Glu  
275 280 285

Phe Glu Asn Thr Ser Val Asp Gly Val Tyr Ala Ile Gly Asp Val Asn  
290 295 300

Gly Lys Ile Ala Leu Thr Pro Val Ala Ile Ala Ala Gly Arg Arg Leu  
305 310 315 320

Ser Glu Arg Leu Phe Asn His Lys Asp Asn Glu Lys Leu Asp Tyr His  
325 330 335

Asn Val Pro Ser Val Ile Phe Thr His Pro Val Ile Gly Thr Val Gly  
 340 345 350

Leu Ser Glu Ala Ala Ala Ile Glu Gln Phe Gly Lys Asp Asn Ile Lys  
 355 360 365

Val Tyr Thr Ser Thr Phe Thr Ser Met Tyr Thr Ala Val Thr Ser Asn  
 370 375 380

Arg Gln Ala Val Lys Met Lys Leu Ile Thr Leu Gly Lys Glu Glu Lys  
 385 390 395 400

Val Ile Gly Leu His Gly Val Gly Tyr Gly Ile Asp Glu Met Ile Gln  
 405 410 415

Gly Phe Ser Val Ala Ile Lys Met Gly Ala Thr Lys Ala Asp Phe Asp  
 420 425 430

Asp Thr Val Ala Ile His Pro Thr Gly Ser Glu Glu Phe Val Thr Met  
 435 440 445

Arg

<210> 136

<211> 1317

<212> DNA

<213> Streptococcus agalactiae

<400> 136

atgagtatca aaaaaagtgt gattggttt tgcctcgaag ctgcagcatt atcaatgttt 60  
 gcttgttag acagtagtca atctgttatg gctgccgaga aggataaagt cgaattacg 120  
 tggtgggctt ttccaacctt tactcaagaa aaggctaagg atggagtagg tacttatgag 180  
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 gatgtgcttt ttgatgcacc agggcgaatt attcaatatg gtaaaaatgg taaattagca 360

gatttgaatg atttatttac agaccaattt attaaggatg tcaataataa gaacatcatt 420  
 caagcttctta agtctggcga taaagcctac atgtatccaa taagttctgc cccatttat 480  
 atggcggttca ataaaaaaat gcttaaagat gcaggagttt tgaaacttgt aaaagaaggt 540  
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 ggttcattct ttgcaaacgg gcaaggagga gatcaaggac cacgtgcatt ttttgcata 660  
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<210> 137

<211> 438

<212> PRT

<213> Streptococcus agalactiae

<400> 137

Met Ser Ile Lys Lys Ser Val Ile Gly Phe Cys Leu Glu Ala Ala Ala  
 1 5 10 15

Leu Ser Met Phe Ala Cys Val Asp Ser Ser Gln Ser Val Met Ala Ala  
 20 25 30

Glu Lys Asp Lys Val Glu Ile Thr Trp Trp Ala Phe Pro Thr Phe Thr  
 35 40 45

Gln Glu Lys Ala Lys Asp Gly Val Gly Thr Tyr Glu Lys Lys Val Ile  
 50 55 60

Lys Ala Phe Glu Lys Lys Asn Pro Asn Ile Lys Val Lys Leu Glu Thr  
 65 70 75 80

150

Ile Asp Phe Thr Ser Gly Pro Glu Lys Ile Thr Thr Ala Ile Glu Ala  
85 90 95

Gly Thr Ala Pro Asp Val Leu Phe Asp Ala Pro Gly Arg Ile Ile Gln  
100 105 110

Tyr Gly Lys Asn Gly Lys Leu Ala Asp Leu Asn Asp Leu Phe Thr Asp  
115 120 125

Gln Phe Ile Lys Asp Val Asn Asn Lys Asn Ile Ile Gln Ala Ser Lys  
130 135 140

Ser Gly Asp Lys Ala Tyr Met Tyr Pro Ile Ser Ser Ala Pro Phe Tyr  
145 150 155 160

Met Ala Phe Asn Lys Lys Met Leu Lys Asp Ala Gly Val Leu Lys Leu  
165 170 175

Val Lys Glu Gly Trp Thr Thr Ser Asp Phe Glu Lys Val Leu Lys Ala  
180 185 190

Leu Lys Asn Lys Gly Tyr Thr Pro Gly Ser Phe Phe Ala Asn Gly Gln  
195 200 205

Gly Gly Asp Gln Gly Pro Arg Ala Phe Phe Ala Asn Leu Tyr Ser Ala  
210 215 220

Pro Ile Thr Asp Lys Glu Val Thr Lys Tyr Thr Thr Asp Thr Lys Asn  
225 230 235 240

Ser Val Lys Ser Met Lys Lys Ile Val Glu Trp Ile Lys Lys Gly Tyr  
245 250 255

Leu Met Asn Gly Ser Gln Tyr Asp Gly Ser Ala Asp Ile Gln Asn Phe  
260 265 270

Ala Asn Gly Gln Thr Ala Phe Thr Ile Leu Trp Ala Pro Ala Gln Pro  
275 280 285

Lys Thr Gln Ala Lys Leu Leu Glu Ser Ser Lys Val Asp Tyr Leu Glu  
290 295 300

Val Pro Phe Pro Ser Glu Asp Gly Lys Pro Asp Leu Glu Tyr Leu Val  
305 310 315 320

Asn Gly Phe Ala Val Phe Asn Asn Lys Asp Glu Asn Lys Val Lys Ala  
325 330 335

Ser Lys Lys Phe Ile Thr Phe Ile Ala Asp Asp Lys Lys Trp Gly Pro  
340 345 350

Lys Asp Val Ile Arg Thr Gly Ala Phe Pro Val Arg Thr Ser Phe Gly  
355 360 365

Asp Leu Tyr Lys Gly Asp Lys Arg Met Met Lys Ile Ser Lys Trp Thr  
370 375 380

Gln Tyr Tyr Ser Pro Tyr Tyr Asn Thr Ile Asp Gly Phe Ser Glu Met  
385 390 395 400

Arg Thr Leu Trp Phe Pro Met Val Gln Ser Val Ser Asn Gly Asp Glu  
405 410 415

Lys Pro Ala Asp Ala Leu Lys Asp Phe Thr Gln Lys Ala Asn Asp Thr  
420 425 430

Ile Lys Lys Ala Ala Lys  
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<210> 138

<211> 40

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

&lt;400&gt; 138

cgagatctga tatctcacaa acagataacg gcgtaaatag

40

&lt;210&gt; 139

&lt;211&gt; 43

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 139

gaagatcttc cccgggatca caaacagata acggcgtaaa tag

43

&lt;210&gt; 140

&lt;211&gt; 42

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 140

cgagatctga tatccatcac aaacagataa cggcgtaaat ag

42

&lt;210&gt; 141

&lt;211&gt; 32

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 141

cgggatcctt atggacctga atcagcgttg tc

32

<210> 142  
<211> 23  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 142  
ggatgctttg tttcaggtgt atc 23

<210> 143  
<211> 82  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 143  
catgatatcg gtacctcaag ctcatatcat tgtccggcaa tggtgtggc tttttttgtt 60  
ttagcggata acaatttcac ac 82

<210> 144  
<211> 81  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 144  
gcggatcccc cgggcttaat taatgtttaa acactagtcg aagatctcgc gaattctcct 60  
gtgtgaaatt gttatccgct a 81

<210> 145  
<211> 24  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 145  
cgccagggtt ttcccagtca cgac

24

<210> 146  
<211> 20  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 146  
tcaggggggc ggagcctatg

20

<210> 147  
<211> 22  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 147  
tcgtatgttg tgtggaattg tg

22

<210> 148  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 148  
tccggctcgt atgttgtgtg gaattg

26

<210> 149  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 149  
aagtatcaga tctgatatatct cacaacacaga taacggcgta aat

43

<210> 150  
<211> 46  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 150  
aagtatcaga tcttccccgg gatcacaaac agataacggc gtaaat

46

<210> 151  
<211> 45  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 151  
aagtatcaga tctgatatacc atcacaaaca gataacggcg taaat

45

<210> 152  
<211> 24  
<212> DNA  
<213> Staphylococcus aureus

<400> 152  
tcacaaacag ataacggcgt aaat

24

<210> 153  
<211> 40  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 153  
cgggatccgc caccatgacc acttctcaag ctgttttagc

40

<210> 154  
<211> 31  
<212> DNA  
<213> Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 154

ttgcggccgc acgattatca acaaagttct g

31

&lt;210&gt; 155

&lt;211&gt; 41

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 155

cggatccgcc accatggcta ctcatattgg aagttaccag c

41

&lt;210&gt; 156

&lt;211&gt; 35

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 156

ttgcggccgc agggtttatt tgttgaagtg tcttg

35

&lt;210&gt; 157

&lt;211&gt; 40

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 157

cggatccgcc accatgtatc tataatcattt accaatgccc 40

&lt;210&gt; 158

&lt;211&gt; 34

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 158

ttgcggccgc tttatgtata gaaacagcag tccc 34

&lt;210&gt; 159

&lt;211&gt; 42

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 159

cggatccgcc accatgaaag gaagaacaac ctattcgttt ag 42

&lt;210&gt; 160

&lt;211&gt; 34

&lt;212&gt; DNA

&lt;213&gt; Artificial Sequence

&lt;220&gt;

&lt;223&gt; Description of Artificial Sequence: Primer

&lt;400&gt; 160

ttgcggccgc aagagcaaat tttcgtatct cctc 34

<210> 161  
<211> 35  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 161  
cggatccgcc accatgattg ttggacacgg aattg

35

<210> 162  
<211> 37  
<212> DNA  
<213> Artificial Sequence

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<220>  
<223> Description of Artificial Sequence: Primer

<400> 162  
ttgcggccgc tttttcttcc tccaaaataa cactagc

37

<210> 163  
<211> 39  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 163  
cggatccgcc accatggcga ctaaagagtt aggtgttag

39

<210> 164  
<211> 39  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 164  
ttgcggccgc tatagtttta gtttcaactt gtctagatg

39

<210> 165  
<211> 39  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 165  
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39

<210> 166  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 166  
ttgcggccgc gtcagtcgt actgttttt tagc

34

<210> 167  
<211> 42  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 167  
cgatccgcc accatgtgtc aatgaatag tgaacataaa ag

42

<210> 168  
<211> 34  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 168  
ttgcggccgc ctcaaataat ttacctccaa ttcg

34

<210> 169  
<211> 39  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 169  
cgatccgcc accatggctc cattcgaatt taaagattc

39

<210> 170  
<211> 34  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 170  
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<210> 171  
<211> 44  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 171  
cggatccgcc accatgaata ctatttataaa tacattgaga acag 44

<210> 172  
<211> 31  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 172  
ttgcggccgc ttctttgttc caactttctg g 31

<210> 173  
<211> 41  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 173  
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41

<210> 174  
<211> 33  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 174  
ttgcggccgc tttatgactc aagcgacgtg tta

33

<210> 175  
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<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 175  
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43

<210> 176  
<211> 35  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 176  
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<210> 177  
<211> 43  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 177  
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43

<210> 178  
<211> 37  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 178  
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37

<210> 179  
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<400> 179  
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48

<210> 180  
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<220>  
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<400> 180  
ttgcggccgc gaaggcaccg ccacctcc

28

<210> 181  
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<223> Description of Artificial Sequence: Primer

<400> 181  
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42

<210> 182  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 182  
ttgccccgc aacacctgg gggcgttgg

30

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<400> 183  
cgatccgc accatggctg ggaatcgtaa taacg

35

<210> 184  
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<400> 184  
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32

<210> 185  
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<212> DNA  
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<220>  
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<400> 185  
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37

<210> 186  
<211> 41  
<212> DNA  
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<223> Description of Artificial Sequence: Primer

<400> 186  
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41

<210> 187  
<211> 37  
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<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 187  
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37

<210> 188  
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<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 188  
ttgcggccgc aaataatttc ttttggttgt ttg 33

<210> 189  
<211> 40  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 189  
cggatccgcc accatgagta atcaagaagt ttcaagcaagc 40

<210> 190  
<211> 33  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 190  
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<210> 191  
<211> 36  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 191  
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36

<210> 192  
<211> 33  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 192  
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33

<210> 193  
<211> 33  
<212> DNA  
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<220>  
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<400> 193  
cggatccac catggctgcc gagaaggata aag

33

<210> 194  
<211> 34  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 194  
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<210> 195  
<211> 39  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 195  
cgggatccac catgtgtcag gttgtttatg caagtttc 39

<210> 196  
<211> 37  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 196  
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<210> 197  
<211> 39  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 197  
gggttaccgg ccaccatggc tgaagtaatt tcaggaagt

39

<210> 198  
<211> 39  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 198  
cggattcccg ttaatcctct ttttttctta gaaacagat

39

<210> 199  
<211> 17  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 199  
cgggatccgc caccatg

17

<210> 200  
<211> 10  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 200  
ttgcggccgc 10

<210> 201  
<211> 28  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 201  
atggaaaaaa atacttgaa aaaattac 28

<210> 202  
<211> 27  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 202  
ctatttgtt ttagcgatgt ctttatc 27

<210> 203  
<211> 26  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 203  
atgtcaaaac aaaaagtaac ggcaac

26

<210> 204  
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<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 204  
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30

<210> 205  
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<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 205  
atgaaaaaaag ttttttttct catggctatg

30

<210> 206  
<211> 28  
<212> DNA  
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<223> Description of Artificial Sequence: Primer

<400> 206  
ttacttcaac tgttgataga gcacttcc

28

<210> 207  
<211> 30  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 207  
ttgttcaatt ttataggttt tagaacttgg

30

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<211> 24  
<212> DNA  
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<220>  
<223> Description of Artificial Sequence: Primer

<400> 208  
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24

<210> 209  
<211> 31  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 209  
atgacaaaaa aacttattat tgctatatta g

31

<210> 210  
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<212> DNA  
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<223> Description of Artificial Sequence: Primer

<400> 210  
ttaacgatta tcaacaaagt tctgtac

27

<210> 211  
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<223> Description of Artificial Sequence: Primer

<400> 211  
atgatacgcc agtttttaag agaa

24

<210> 212  
<211> 27  
<212> DNA  
<213> Artificial Sequence

<220>  
<223> Description of Artificial Sequence: Primer

<400> 212  
ttatttatgt atagaaaacag cagtccc

27